CITY OF LOS ANGELES
INTER-DEPARTMENTAL CORRESPONDENCE

0220-06020-0004
Council File: 23-0600

Date: April 11, 2025

To: The Honorable Mayor Karen Bass
The Honorable City Council

From: Matthew W. Szabo, City Administrative Officer
Office of the City Administrative Officer

Laura Rubio-Cornejo, General Manager
Department of Transportation

Subject: **CITY ADMINISTRATIVE OFFICER VISION ZERO PROGRAM INDEPENDENT EVALUATION AND LOS ANGELES DEPARTMENT OF TRANSPORTATION VISION ZERO EVALUATION AND SAFETY PLAN - REVISED**

SUMMARY

In Fiscal Year (FY) 2015-16, the City of Los Angeles (City) began the Vision Zero Initiative with the goal of eliminating traffic deaths within the City by 2025, with a particular emphasis on protecting road users that are the most physically vulnerable to injury or death from traffic crashes: people who walk and bicycle. The City's approach to achieve zero traffic fatalities consisted of prioritizing the areas with most need and following the "Four Es":

- **Educate** the public through safety campaigns that reinforce safe driving**;**
- **Enforce** traffic safety laws in areas that have high collision rates to protect our most vulnerable road users;
- **Engineering** and designing streets to anticipate human error and minimize the consequences of mistakes; and,
- **Evaluate** and monitor progress continuously to ensure that the City is on track to reach the target.

In the 2022-23 Adopted Budget, the Mayor and City Council authorized $500,000 for an Independent Evaluation of the Vision Zero Program. On March 2, 2023, the Office of the City Administrator (CAO) executed a contract with KPMG, LLP (KPMG) to conduct an independent evaluation of the City Vision Zero Program. KPMG hired Kimley-Horn, a sub-consultant with traffic safety expertise, to assist with the independent evaluation. KPMG was tasked with evaluating the results of the first seven years of the Vision Zero Program with the goal of improving the program implementation and reducing overall traffic deaths on City streets.

Prior to the CAO receiving this funding from Council, in 2022, the Los Angeles Department of Transportation (LADOT) separately hired a consultant, Fehr and Peers, for a study evaluating the effectiveness of individual transportation projects. LADOT's Vision Zero Safety Study (Safety Study) analyzed collision data from the most recently available five-year period (2017 - 2021) to identify trends, define consistent characteristics, and recommend countermeasures to improve safety outcomes on City streets. This analysis produced a new set of Priority Safety Corridors (previously referred to as the High Injury Network and Priority Corridors) that focuses on prior crashes that resulted in death and severe injury, and roadway characteristics like driving speeds, pedestrian volumes, and roadway width that make crashes more likely to occur in the future. The study identified speeding violations as a primary factor in 40 percent of fatal crashes, found a disproportionately high rate of pedestrian injury and death that predominantly impacted black and low-income communities, and noted a continued prevalence of crashes resulting in death and severe injury especially occurring at night.

The findings in both evaluations point towards an opportunity to relaunch the Vision Zero Program with a more deliberate and collaborative approach. This report outlines the CAO and LADOT's recommendations resulting from these two studies, and transmits both the KPMG Vision Zero Program Independent Evaluation and the Fehr and Peers Safety Study.

RECOMMENDATIONS

That the Council, subject to approval of the Mayor:

1. Authorize the use of $1.7 million in uncommitted funds in Fund No. 59C/94, Account No. 94YG25 Vision Zero Corridor Projects to address the immediate actions in this report for the following purposes:

   a. Authorize the Controller to transfer and appropriate $500,000 from Fund No. 59C/94, Account No. 94YG25 Vision Zero Corridor Projects to a new account entitled Vision Zero Educational Campaign;

   b. Authorize the Controller to transfer and appropriate $900,000 from Fund No. 59C/94, Account No. 94YG25 Vision Zero Corridor Projects to a new account entitled Street Design Manual for the Street Design Manual updates;

   c. Authorize the Controller to transfer and appropriate $300,000 from Fund No. 59C/94, Account No. 94YG25 Vision Zero Corridor Projects to a new account entitled Speed Safety System Pilot Program for the LADOT to hire a consultant to assist with the program framework and data collection and analysis for the Speed Safety Use Policy and a Speed Safety System Impact Report; and,

   d. Authorize the Office of the City Administrative Officer to make technical corrections, as necessary, to the transactions authorized in this report, as required to implement the intent of those transactions.

2. Direct LADOT and the CAO to report on the expenditure and encumbrance of all Vision Zero funds from all fiscal years in the First Financial Status Report and the Mid-Year Financial Status Report;

3. Direct the Los Angeles Police Department (LAPD), with support from LADOT, to report back on the percentage of speeding violations issued on the High Injury Network from its 2018 adoption to present, as well as traffic enforcement strategies to improve compliance with traffic safety laws, and an implementation plan that prioritizes compliance on the streets in the City of Los Angeles with the highest rates of crashes that result in severe injury and death;

4. Direct LAPD and the Los Angeles Fire Department (LAFD), in coordination with LADOT, to report back on improving data collection and reporting for all types of collisions, including near-misses to better understand the volume of crashes and specific road design interventions needed to advance Vision Zero;

5. Instruct the City Attorney, LAPD, and LADOT to report back with an evaluation of the City's previous red light camera program, including the potential benefits of red light camera enforcement and an analysis of the concerns that caused City Council to end the City's red light camera enforcement programs, and any required legislative adjustments to effectively utilize photo red light cameras;

6. Request the City Attorney, with the assistance of LAPD and LADOT, to draft an ordinance to update the Los Angeles Municipal Code (LAMC) to reflect recent changes to State law so that they can be enforced to improve safety, and report back on proposed ordinance(s) to ensure pedestrian safety based on the forthcoming findings from the California Highway Patrol as directed in Assembly Bill 2147;

7. Approve the 2024 Priority Safety Corridors methodology that will prioritize traffic safety investments in street design and infrastructure projects based on existing crash data, equity metrics, and other contextual factors;

8. Direct LADOT and the appropriate Vision Zero Executive Directive 9 (ED9) subcommittee departments to report back with a recommended methodology to prioritize traffic safety investments in historically disadvantaged communities with the highest needs. This report should refer to and incorporate the recommendations included in CF 23-0935;

9. Direct LADOT, with the assistance of LAPD and other appropriate departments, to update the 2018 Vision Zero Action Plan, provide that Action Plan to both the Mayor and the City Council, and to provide annual progress updates;

10. Direct LADOT and LAPD to provide quarterly reports on the activities and progress toward the Action Plan, and the activities of the Vision Zero ED9 subcommittee;

11. Direct LADOT, with the assistance of LAPD and CAO, to report back with an implementation plan and funding strategy to apply the recommendations in the Safety Study countermeasures toolkit to address traffic crashes that result in pedestrian deaths and

serious injuries at unmarked, marked, controlled, and uncontrolled crosswalks;

12. Direct LADOT, with the assistance of LAPD and the CAO, and other appropriate City departments to report back with an implementation and funding strategy for the use of automated speed enforcement, in accordance with direction in CF 23-1168;

13. Direct LADOT to report back within 90 days with a proposed Vision Zero Educational/Public Awareness Campaign that incorporates the findings of both third-party evaluations, including the planned use of educational campaign funds and any additional resources needed to execute the campaign; and,

14. Direct the Department of Public Works (DPW) Bureaus of Engineering (BOE), Street Lighting (BSL), and Street Services (BSS), and LAPD to report on how the findings of the Vision Zero Safety Study collision trend analysis and the new Vision Zero prioritization methodology can be incorporated in their work plan to improve safety outcomes.

BACKGROUND

Vision Zero is a framework that originated in Sweden in 1997. Now adopted in nearly 50 cities across the country, Vision Zero follows a Safe Systems Approach[1] designed to account for human error and minimize its consequences on the road. The goal of the Safe Systems Approach is simple – reduce both the frequency and severity of traffic crashes so that fewer people are injured and nobody is killed if a crash does occur. The Safe Systems Approach recognizes that road users are human and will make mistakes but the consequences of those mistakes vary for drivers, motorcyclists, bicyclists, and pedestrians. Because the speed of the vehicle involved in a crash determines the severity of human injury or death, the Safe Systems Approach focuses on reduced vehicle speeds to improve safety outcomes. It incorporates safe street design to both prevent crashes and protect road users who are the most physically vulnerable to injury or death from a crash – those who are walking or biking.

A City formally adopts Vision Zero when its mayor publicly sets the goal to eliminate traffic fatalities with a clear time frame and established action plan. On August 24, 2015, Mayor Eric Garcetti issued ED 10, establishing the City Vision Zero Program, a Citywide initiative to reduce traffic fatalities. The Directive established a Vision Zero Steering Committee, comprised of key City departments, and a Vision Zero Task Force, comprised of key City departments and various stakeholders, to coordinate, implement, and evaluate near-term and long-term actions to achieve the goals as follows:

- Reduce traffic fatalities Citywide by 20 percent by 2017 (compared to 2016), prioritizing pedestrian fatalities involving older adults and children; and,
- Reduce traffic fatalities Citywide to zero by 2025.

In 2016, LADOT found that 65 percent of all severe and fatal collisions occur on six percent (or 500 miles) of City streets based on finalized crash data from the Statewide Integrated Traffic

[1] USDOT Safe Systems Approach Website

Records System (SWITRS). These streets became the High Injury Network (HIN). The HIN was later refined to include 71 priority corridors and 90 priority intersections that account for the majority of traffic fatalities for people walking and biking.

In January 2017, LADOT released the Vision Zero Action Plan (C.F. 15-546-S3), which identified the actions and strategies to achieve zero traffic deaths by 2025. The Vision Zero Action Plan also identified a 50 percent reduction in traffic fatalities by 2020 (compared to 2016) as a benchmark to measure the City's progress in achieving the goals.

In 2018, LADOT released the Vision Zero Action Plan and Progress Report that tracked the City's progress toward its goals and the work plan to achieve zero traffic fatalities by 2025. It reported that the City experienced a reduction in traffic deaths, from 253 deaths in 2016 to 245 deaths in 2017 due to the immediate efforts, including engineering treatments installed on all 40 Priority Corridors, as well as focused efforts in enforcement and education. LADOT reports annually to the City Council on its progress in achieving the Action Plan and implementation strategy for the upcoming fiscal year.

As part of the Vision Zero initiative, LADOT installed more than 7,000 individual treatments on the HIN, redesigned nearly 20 miles of HIN streets, and collaborated with the Department of Public Works to deliver five Complete Streets Projects with two additional projects currently in bid and award and in design. Despite the City's pledge and the investments made to date, traffic fatalities continued to rise and continue to disproportionately affect low-income people of color, people walking, and people biking.

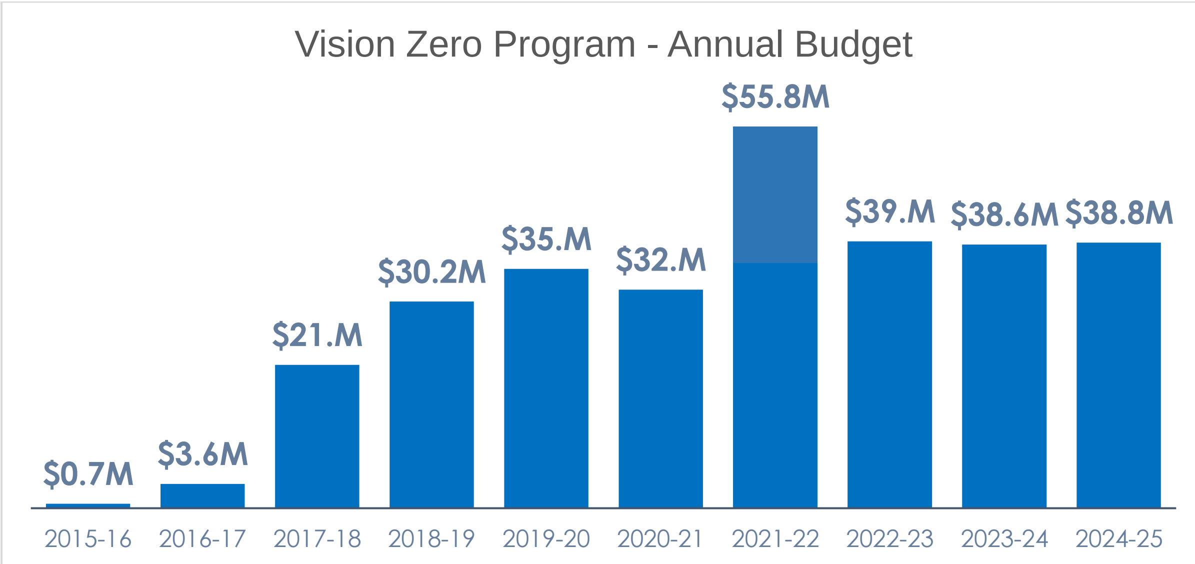
In December 2020, LADOT was awarded grant funding to analyze the most recent crash data and make recommendations to advance LADOT's efforts to improve traffic safety through street design and engineering. These funds were allocated in the FY 2022-2023 budget, and LADOT launched a Safety Study with Fehr and Peers in January 2023.

In May 2022, Mayor and Council directed an audit of the City's Vision Zero Initiative, to serve as guidance in the City's continued efforts to reduce and eventually eliminate deaths and serious injuries caused by traffic collisions (CF 23-0600). This effort was led by the CAO.

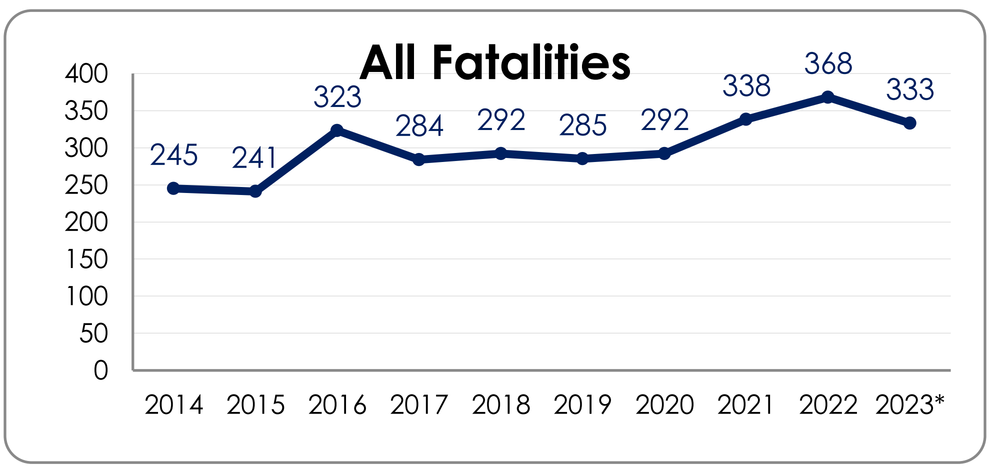
KPMG'S INDEPENDENT EVALUATION

The KPMG Team began their evaluation by conducting research, interviewing representatives from all departments that were involved with the Vision Zero Program and conducting follow-up interviews as necessary, requesting and collecting data from the departments and outside agencies, and surveying peer cities about their Vision Zero implementation. The final report is attached, and the findings and recommendations are summarized below.

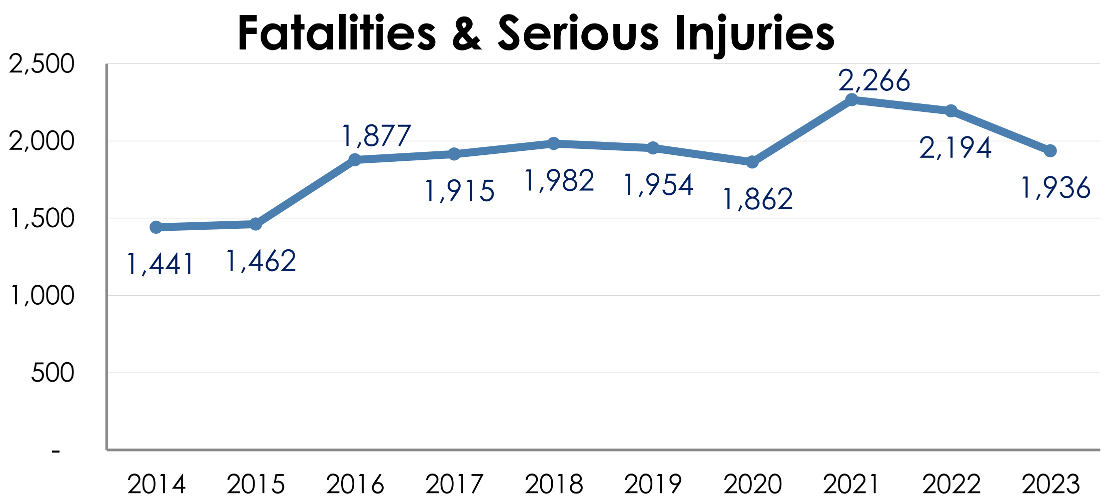
Since FY 2015-16 to 2023-24, the City has allocated over $255 million to all departments that are part of the Vision Zero Program (see chart below) This dedicated allocation excludes other individual transportation programs funded through the City's budget, such as general street repair, bike lane projects, residential speed humps, or street lighting projects.



Based on data from the SWITRS database, the City experienced a modest success in reducing traffic fatalities in 2016-17 and since then, it has remained flat or increased slightly, which is similar to the national trend. In 2023, there were more than 300 deaths caused by traffic crashes in the City of Los Angeles, and while 2024 shows some improvement, it is unlikely that traffic deaths will be eliminated in 2025. KPMG provided an overview of traffic deaths and serious injuries outlined in the charts below, and LADOT's Safety Study provides a more in-depth crash analysis, detailed in the Safety Study summary provided in this report.



* The data for 2023 was not available at the time that KPMG completed their report. This data is pulled from the SWITRS database.



According to data from SWITRS, between calendar years 2014-2023, 88 percent of traffic violations resulting in pedestrian fatalities or serious injuries were a result of violations by drivers (40 percent) and pedestrians (48 percent). The modes of transportation responsible for the remaining 12 percent of the violations is unknown. This report builds on this data and includes additional context and detailed information about the modes and violations in the Fehr and Peers Safety Study section below.

The KPMG Team noted that some of the key areas that led to the decline in the effectiveness of the Vision Zero Program over the last five years included:

- Lack of clear governance of this Citywide program and priorities between the different stakeholders that were not always in alignment;
- Tools to monitor and manage the program were not implemented, impacting transparency and justification for Departmental budget requests;
- Lack of a balanced approach as funding was allocated mainly for engineering activities, with minimal funding towards education, enforcement, and evaluation; and,
- A decline in participation of key stakeholders.

As defined in the KPMG report, stakeholders refer to the Bureaus of Engineering, Street Lighting, and Street Services, LADOT, and LAPD, as well as the offices of the CAO, the Mayor, and Council Districts.

The Independent Evaluation discussed 13 findings across the three topic areas (uses of data, application of traffic safety solutions, and City support) and identified 37 improvement opportunities (see Appendix A). These improvement opportunities were assigned a priority level (medium and high) by KPMG based on the relative impact to successful achievement of the Vision Zero goals set in 2015.

Based on the findings in the KPMG report, the CAO organized its recommendations into three categories:

- A better balance of education, enforcement, engineering, and evaluation, while ensuring investments are prioritized in historically disadvantaged communities;

- Reallocation of existing Vision Zero funding in support of a balanced effort; and,
- Overall program support and accountability.

We have also included budgetary recommendations to help with implementation of some of these recommendations.

A Balanced Program Effort – "The Four Es"

KPMG found that the City allocated the majority of Vision Zero Program funds to engineering activities, which is different from other peer cities, which allocated a higher percentage of their Program funds to the other Es. While almost no cities included in the KPMG study have seen overall reduction in fatalities and serious injuries, some have had more successful safety outcomes than Los Angeles. Therefore, KPMG recommended that the City consider changing the balance of investment in the four E's.

Education

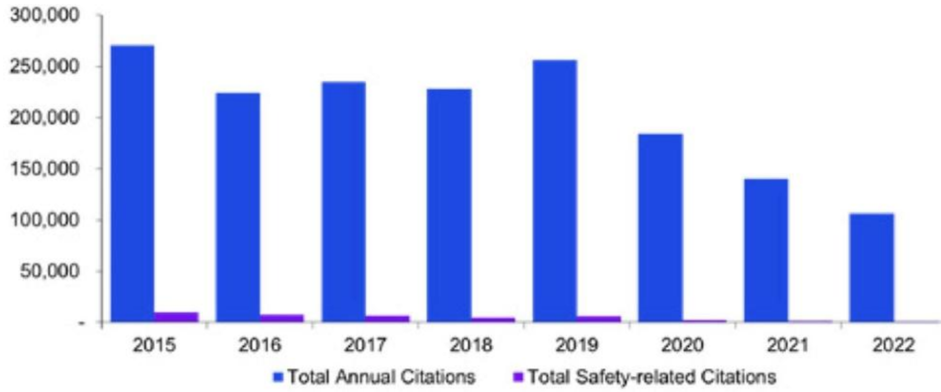
During the initial years of the Vision Zero Program, LADOT was awarded grant funding to conduct an educational campaign, informing the public to slow down and that speed kills. Since 2017-18, due to lack of staffing resources to develop and manage a comprehensive awareness and education campaign, LADOT has not pursued grant funding for this effort and the City has not funded any additional education campaigns branded as Vision Zero. As such, it is recommended that the City fund and implement a multi-pronged educational campaign based on the findings of the Safety Study.

LADOT currently receives $1 million annually to conduct community engagement for Vision Zero street design projects. In order to expand this work to include a Citywide educational campaign, funding for staff to develop and execute an educational campaign or manage a communications contract is needed. This report proposes a one-time $500,000 allocation to initiate this effort.

Enforcement

Since speeding is the most significant factor that determines the severity of any crash, and significantly increases the risk of death to pedestrians and bicyclists who are more physically vulnerable during a crash, the enforcement of traffic safety laws that reduce speeding must be prioritized on streets with the highest rate of traffic fatalities and serious injuries. Especially on HIN streets, illegal speeding and moving violations that contribute to collision characteristics must be adequately enforced and prioritized over other moving violations that do not directly reduce the frequency and severity of crashes. This is in line with the City's goals to limit pretextual stops, reduce the interaction between drivers and armed officers, and focus limited resources on driving behavior that has the highest safety consequences.

KPMG found that in 2018, LAPD reduced enforcement activities on the HIN due to concerns about over-policing, especially in low-income communities. Since then, enforcement agencies across the nation have reduced traffic stops due to tensions mounting from the 2020 civil rights protests, ongoing staffing shortages, and competing priorities. While there is no specified enforcement activity identified as Vision Zero, the LAPD reports that they have enforcement and extra patrols on the HIN. As shown in the table below, the number of annual citations, including the number of traffic safety-related citations issued by LAPD has decreased over the years.



The LAPD reported that it recently established a new policy mandating that officers only conduct traffic enforcement for those violations that impact public safety. The LAPD reported that they emphasize the importance of traffic enforcement, especially along the HIN to officers. However, due to competing demands on officers, LAPD prioritized responding to 911 calls over traffic safety enforcement.

The nationwide reduction in traffic enforcement over the last decade occurred alongside a dramatic increase in fatal crashes, with car crashes killing more people than homicides in Los Angeles last year. As such, the City should also consider evaluating the number of traffic citations issued along the HIN, prioritize enforcing traffic safety violations on the streets with the highest concentration of crashes that result in death or serious injury, and updating other enforcement measures to reflect recent changes in State law, including automated speed enforcement, daylighting, pedestrian crossings, and/or photo red light cameras to better enforce traffic safety laws that improve safety for all road users.

- Setting Safer Speed Limits – Assembly Bill (AB) 43

  On October 8, 2021, the State Governor signed AB 43 into law, granting cities greater flexibility in setting speed limits based on safety needs rather than prevailing speeds. After years of advocacy from the City of Los Angeles, this law allowed LADOT to repeal nearly 200 miles of speed limit increases previously required by State law in order to use radar for enforcement. (C.F. 21-1223).

- Decriminalizing Jaywalking – AB 2147

  On September 30, 2022, the State Governor signed AB 2147 into law, amending several sections of the California Vehicle Code (CVC) relating to pedestrians. These sections of the CVC outline when, where, and how drivers and pedestrians shall proceed through an intersection, and the responsibilities of each to use due care. Broadly speaking, these sections give pedestrians the right of way when crossing at any marked or unmarked crosswalk, unless otherwise prohibited by sign or signal. They assert that drivers must yield to pedestrians in any marked or unmarked crosswalk, exercise due care, and reduce speed to ensure the safety of the pedestrian.

The provisions of AB 2147 prohibit a peace officer from stopping a pedestrian for violating any of the requirements laid out in the CVC unless a reasonably careful person would realize there is an immediate danger of collision. This does not, however, relieve either the pedestrian or driver from exercising due care for their own safety. The law also requires the Commissioner of the California Highway Patrol (CHP) to submit a report to the Legislature on or before January 1, 2028, regarding statewide pedestrian-related traffic crash data and any associated impacts to traffic safety, including an evaluation of whether and how the changes made by this bill have affected pedestrian safety.

While the same enforcement limitations outlined in AB 2147 apply, CVC Section 21961 authorizes local authorities to adopt ordinances prohibiting pedestrians from crossing roadways at locations other than crosswalks. It is recommended that following the 2028 CHP report to the Legislature, the City Attorney, with the assistance of LAPD and LADOT, report on enforcement strategies and proposed ordinance(s) necessary to ensure safe pedestrian crossings in light of the decriminalization of jaywalking.

- Speed Safety System Pilot Program – AB 645

  On October 13, 2023, the Governor approved AB 645, which will allow the City (and five other cities) to implement a speed camera pilot program to capture a vehicle’s license if the vehicle speed exceeds the speed limit by 11 miles per hour or more and allow the City to impose civil penalties. Based on the City’s population, the City is allowed to install 125 systems, which may be in operation for five years, or until January 1, 2032, whichever date is sooner. LADOT is currently leading this effort (C.F. 23-1168).

- Daylighting to Save Lives – AB 413

  On October 10, 2023, the State Governor signed AB 413, the Daylighting to Save Lives Bill, which amended the California Vehicle Code to ban vehicles from stopping, parking, or standing within 20 feet of the vehicle approach side of any marked or unmarked crosswalk or 15 feet of any crosswalk where a curb extension is present.

  LADOT design safety standards already meet or exceed the minimum 20 feet “No Parking” distance established under AB413. These restrictions are enforceable where marked, subject to fines established in the Los Angeles Municipal Code (LAMC). In residential areas with low traffic volumes where these restrictions may not be marked, they cannot be enforced until the LAMC is updated to reflect the change in state law. To ensure the safety benefits of this new law, it is recommended that the City Attorney be requested to draft an ordinance to update the LAMC to allow LADOT to enforce daylighting at all intersections.

- Photo Red Light Program

  Photo red light programs use cameras to capture images and license plate information to issue citations to vehicles violating red light traffic safety laws. In December 2000, the

City launched a photo red light enforcement pilot program to reduce traffic collisions at 16 intersections. According to C.F. 03-0354, these intersections saw a “significant reduction in collision activity”, and in 2004, Council authorized LAPD to issue a Request for Proposal (RFP) to expand the program. According to C.F. 07-1202, additional locations activated in February 2006 saw a 15 percent reduction in traffic collisions. In 2010 in C.F. 07-1202-S8, LAPD reported a reduction in red light-related collisions in every year of the program, with a 40 percent reduction in 2008, and zero red light traffic collision fatalities at any of the intersections included in the program. In 2011 in C.F. 11-0504, LAPD reported a 63 percent reduction in red light-related crashes across all 32 locations and requested a contract extension to continue the program. Los Angeles was one of many cities to implement photo red light camera programs in the early 2000s, and in 2010, both the National Traffic Safety Administration and the National Safety Council reported the benefits of these programs, noting a 30 percent reduction in collisions and a 58 percent reduction in red light violations at intersections with cameras. Despite these benefits, the City Council terminated the program in 2011, following public criticism and a Controller audit finding that the program was not cost recoverable. Therefore, we recommend that the City Attorney, in conjunction with LADOT and the LAPD, evaluate whether the City should re-initiate the Photo Red Light Program.

Data Collection

Accurate and consistent data collection is required to effectively measure the impact and direct enforcement activity. In 2021, the LAPD stopped collecting and analyzing minor crash data. The LAPD is required to file reports when a traffic collision involves one or more of the following: fatality, suspected serious injury, hit-and-run injury, City property involved with possible City liability, and driving under the influence. Since the LAPD is currently using handwritten and paper data entry for citations and crash reports, and minor or possible injuries are not reported, this has resulted in incomplete data and reduced the accuracy and reliability of injury record data and enforcement activity, and difficulties with extracting the data to be shared with LADOT for safety analysis. The LAPD reported that it is working with Motorola to implement a new Records and Management System that will automate crime and crash reports as well as provide electronic citations.

KPMG recommended that LAPD improve the crash data collection and reporting processes so that the crash data is complete and available for analysis. With updated crash data, the LAPD and LADOT could re-prioritize enforcement activities and the implementation of Vision Zero projects, respectively, in the areas with the highest need. It is recommended that data collection and reporting be improved for all types of collisions, as well as near-misses, which will allow LADOT to identify contributing factors to severe and fatal crashes and appropriate mitigation measures. While the Safety Study used available data to develop collision profiles and pair them with appropriate countermeasures, this more robust data moving forward will better inform decision-making and design.

Engineering

KPMG reported that one of the strengths of the City's Vision Zero Program is the use of crash data in choosing new locations for safety improvements. LADOT prioritized Vision Zero projects on the HIN; initially implementing a series of lower-cost countermeasures (Phase 1 treatments) designed to reduce traffic fatalities at specific areas with high concentrations of fatal and serious injury crashes. Additionally, LADOT used the HIN to prioritize large capital investments, which typically involve new and modified traffic signals and other infrastructure under LADOT control (Phase 2 treatments), and larger projects that typically involve civil improvements and concrete construction that require coordination with other departments (Phase 3 treatments).

KPMG noted that because Phase 3 projects represent the most substantial and capital-intensive investments, these require considerable cross-departmental coordination. Securing funding to implement Phase 3 treatments can be challenging, as resource needs are high and the City's limited resources have many competing capital expenses. Systemic planning challenges relative to advanced planning, budgeting, and project development hinder progress. As a Citywide program, Vision Zero suffers from a lack of multi-departmental and/or multi-year budget planning.

The KPMG Team reported that LADOT updated the HIN and priority corridors, with one overarching HIN (2024 Priority Safety Corridors), and five modal-specific HINs (vehicle, motorcycle, bicycle, scooter, and pedestrian). Additionally, the priority corridor updates consider the inclusion of near miss data and an increased focus on underserved communities, addressing those communities with the highest needs. This aligns with KPMG's finding to embed equity in planning and project selection and ensuring a systemic approach to planning and implementation of Vision Zero safety improvements. Therefore, it is recommended that the City adopt the new Priority Safety Corridors and direct LADOT and appropriate departments to develop a shared methodology to prioritize investments in historically disadvantaged communities. This recommendation should be informed by and developed in accordance with existing Council direction given in C.F. 23-0935 to identify a Citywide definition of equity that is used to prioritize all transportation infrastructure projects.

Since pedestrians represent the largest category of fatalities and serious injuries, pedestrian focused safety improvements should be prioritized, especially in the underserved areas. LADOT's independent Safety Study, described in and attached to this report, includes a detailed overview of pedestrian-focused safety improvements including, but not limited to, scramble crosswalks, raised crosswalks, signal timings, curb bump-outs, centerline hardenings, and crosswalk improvements that provide pedestrian (and bicyclist) safety and develop standardized interventions for different types of streets that can be implemented to improve pedestrian safety. To apply the findings in the Safety Study, it is recommended that LADOT, with the assistance of the CAO, report back with an implementation and funding strategy to deliver these treatments on the pedestrian focused Safety Corridors, also identified in the Safety Study.

Evaluation

LADOT conducts before-and-after assessments of completed road reconfiguration projects to evaluate the effectiveness of each safety-related treatment. In 2022, the LADOT hired a consultant, Fehr and Peers, for a Vision Zero Safety Study. The scope of work included evaluating completed projects to understand their effectiveness, performing a systemic safety analysis to identify physical condition of streets that most likely result in certain types of crashes, and developing a new HIN and set of Priority Corridors. LADOT provides an annual report to the City Council on their implementation strategy for the upcoming year. It is recommended that LADOT and the CAO report back with a strategic approach and funding plan, to implement design solutions for safety across all modes of travel, based on the countermeasures evaluation and toolkit included in the Safety Study.

Vision Zero Budget

KPMG and the CAO found that much of the Vision Zero money allocated by the Mayor and Council has not yet been spent, primarily due to the majority of funding being allocated toward engineering activities, which take multiple years to plan, construct, and require coordination across LADOT and DPW. Without multi-departmental, coordinated advanced planning and budgeting to align these efforts, funds are left unspent, which then leads to possible rising costs due to inflation and cost of materials. Meanwhile identified project budgets become insufficient due to rising costs. Once departments are ready to implement the project, additional funding is needed for implementation or the full budget was not allocated at the planning stage.

At this time, there is a total of $1.7 million of uncommitted funds in existing Vision Zero project appropriations that can be reallocated to meet specific goals identified in the KPMG report:

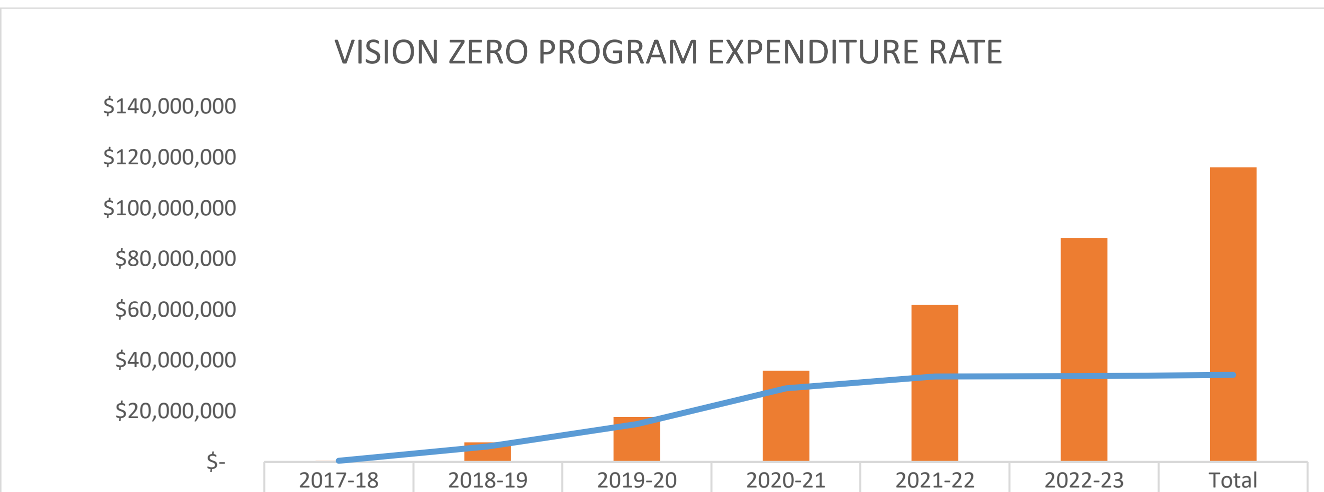
- $500,000 in contractual services funding for a public awareness campaign, with the initial campaign efforts focused in communities located on or near HIN streets, on the need to drive safely in order to save lives, and consider other messaging such as not texting and walking, to buckle up, and the roll-out of the speed safety camera pilot program. The LADOT should consider advertising on street furniture, newspapers, radio stations, social media/digital outlets, exterior bus displays, City fleet of sanitation and street services trucks, and any other outlets.

- $900,000 in contractual services funding for the Street Design Manual update based on actual bids received by BOE. Currently, City staff use the Street Design Manual, which has not been updated since 1986, and various plans such as the Complete Street Design Guide as guidance documents when designing projects. The KPMG Team finds that having an updated Street Design Manual that addresses all related design and guidance documentation into one manual will ensure that capital projects will incorporate the necessary updated elements, inclusive of Vision Zero safety-related elements. Total funding, including $300,000 million in 2024-25, for the Street Design Manual update is $1.05 million. This will bring the total to $1.95 million to fund the initial phase of the manual update and a framework for a Public Realm Design Guidance web portal that will serve as a one-stop resource for in-house staff and the development community.

- $300,000 to hire consultants to help develop a program framework and data collection and analysis for the Speed Safety System Use Policy and a Speed Safety System Impact Report as required by AB 645, and develop and execute a community engagement plan that complies with the requirements of the bill.

As part of the annual City budget process, LADOT is allocated a lump sum for Vision Zero project implementation rather than individual project budgets allocated funding for the full project delivery timeline. The KPMG report found that the City's lack of long-term capital program planning results in inefficient budgeting and spending that diminishes program outcomes. This in turn causes the slow rate of expenditures from Vision Zero accounts (as shown in the chart below), and makes it difficult to strategically invest in Vision Zero projects. This also leads to low accountability and transparency for the expenditure of funds and effective implementation of life saving measures. Therefore, it is recommended that LADOT, with the support of DPW, provide updates on Vision Zero spending in the First and Mid-Year Financial Status Reports.

Additionally, it is recommended that LADOT with the appropriate departments submit project level requests, identifying the streets, interventions proposed, costs and timeline for consideration during the annual budget process. Sufficient outreach, design, and implementation costs should be included. Projects that address locations with a higher number of people killed or seriously injured (KSI), as well as other contextual factors such as equity should be a priority for funding through LADOT's prioritization methodology that established the Priority Safety Corridors.



	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	Total
Cumulative Appropriations	$462,340	$7,780,955	$17,629,518	$35,933,656	$61,835,057	$88,257,693	$116,049,749
Cumulative Expenditures	$462,340	$6,043,954	$14,901,071	$29,035,616	$33,635,271	$33,797,146	$34,291,489

* Based on four Vision Zero appropriations, excluding MICLA funding, as follows: Vision Zero Education and Outreach, Vision Zero Corridor Projects, Vision Zero Traffic Signals, and Vision Zero Bus Stop Security Lighting; encumbered funds are reflected as unspent.

Program Support and Oversight

Mayor Eric Garcetti's ED10 established a Vision Zero Steering Committee, co-chaired by LADOT and LAPD, to coordinate safety efforts and provide reports to the Mayor and City Council. KPMG cites a lack of clear governance across Steering Committee departments, with well-defined roles and responsibilities, as a key barrier to making progress toward Vision Zero.

Based on their findings, KPMG recommends re-establishing a steering committee with documented roles, responsibilities, and meeting cadence, as well as a documented decision-making process. While establishment of this function is not a guarantee that the Program effectiveness will improve, it is necessary to ensure the efficient use of City resources for a life-saving Program that involves the timely coordination of multiple City departments.

The Vision Zero Action Plan serves as a work plan for departments involved in Vision Zero implementation. It was last published in 2018. KPMG reported that of the 56 actions and strategies with 2017 and 2020 target dates that were included in the Vision Zero Action Plans, five percent were achieved on time, 48 percent were achieved with a one- to three-year delay, and the remaining 46 percent have not been achieved. The KPMG Team noted that multiple departments may be assigned to an action, but no lead department was identified, resulting in a lack of accountability. As such, KPMG recommends that the Action Plan be updated on an annual basis to track progress of various actions and strategies assigned to departments, with one department assigned the lead. LADOT is currently leading the Vision Zero efforts with minimal involvement from other departments and oversight. Therefore, participation of all key stakeholders is necessary and should be a high priority throughout the Program.

Mayor Bass recently issued a new directive, ED 9, which created an interdepartmental project delivery committee that supersedes previous interagency coordination groups, including the Vision Zero Steering Committee. This new committee can provide the necessary oversight and report to the Mayor and City Council on the status of the Program and the effectiveness of each countermeasure. This executive oversight would develop the necessary program framework, ensure active participation of all parties, and oversee the implementation of the Vision Zero Program, including the Vision Zero Action Plan.

The Mayor and City Council's support is also critical in influencing any proposed state legislation related to speed management and safety regulations, and addressing stakeholder's concerns or opposition to proposed Vision Zero projects.

In summary, the City implemented a Vision Zero Program and provided funding in the budget over the last seven years in an effort to address the numbers of traffic fatalities Citywide. Since there has been no meaningful reduction in traffic fatalities in recent years, the City has to reframe its current Vision Zero Program.

FEHR & PEERS VISION ZERO SAFETY STUDY

From 2022 to 2024, LADOT worked with their consultant, Fehr & Peers, on the Vision Zero Safety Analysis Task Order Solicitation (TOS), which resulted in the Safety Study report finalized in 2024. Where KPMG produced an evaluation of Citywide efforts carried out by all relevant City Departments, this report focused on treatments within LADOT's purview.

In its evaluation, Fehr & Peers used the most recently available crash data between 2017 and 2021 to analyze crash trends, evaluate the effectiveness of individual treatments, and make recommendations to improve progress toward eliminating traffic fatalities. The evaluation assessed overall trends to identify possible correlations between crash locations and demographics, road user behavior, times and dates, and roadway and build environment characteristics. Based on these findings, the Safety Study provides an updated toolbox of proven safety countermeasures, and pairs specific crash types frequently seen in Los Angeles with corresponding engineering strategies to address those crashes.

To strategically invest resources to have the largest impact on safety outcomes, the Safety Study also included an evaluation of the effectiveness of individual safety treatments and corridor projects installed by LADOT since the start of the Vision Zero Program, and an update to the City's High-Injury Network, referred to as Safety Priority Corridors, which includes a new equity-driven prioritization methodology to rank corridors and intersections across the City. These components align with and satisfy some of the LADOT-specific recommendations in the KPMG report.

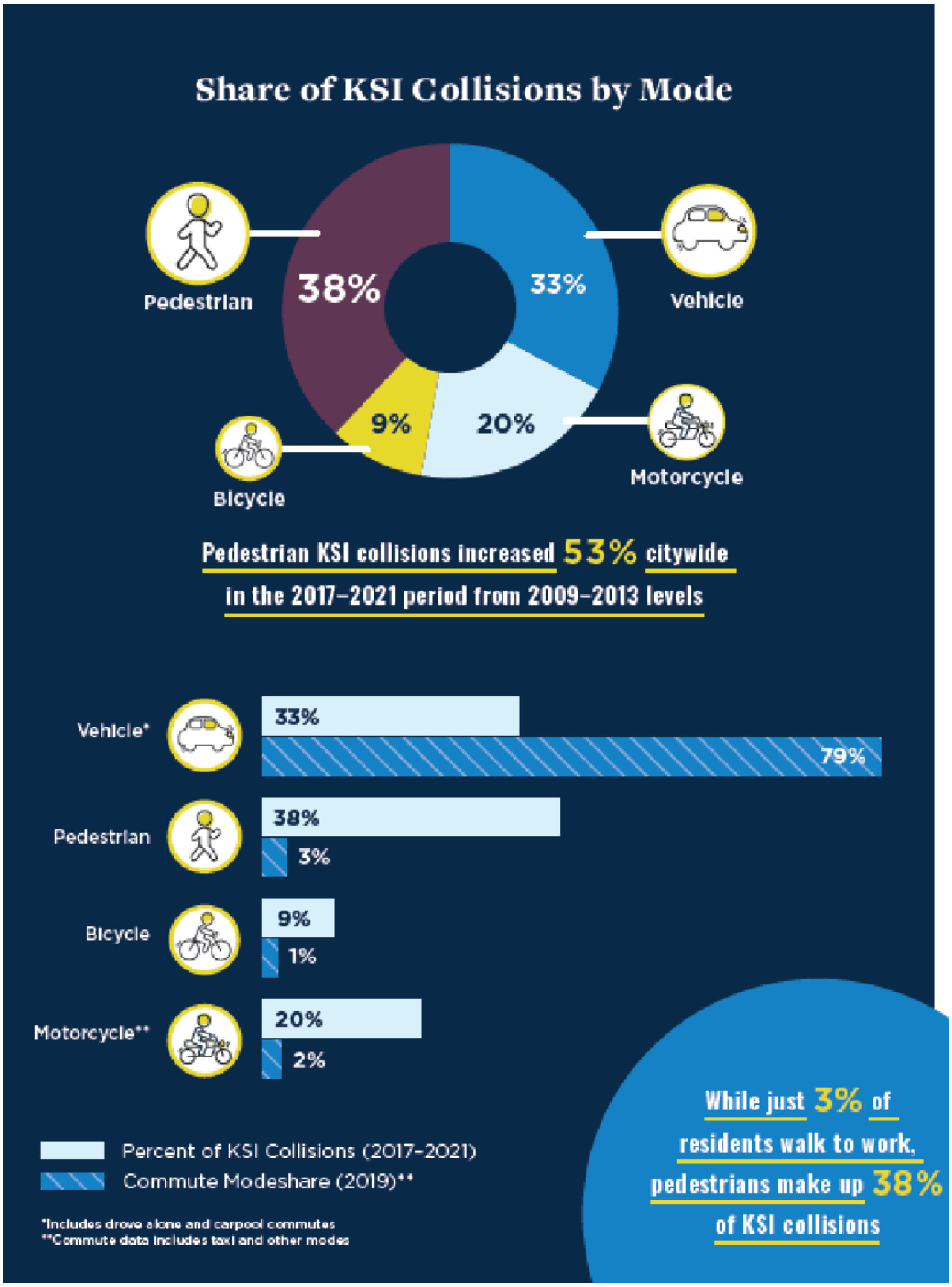
Collision Landscape Analysis

The Collision Landscape Analysis analyzed the most recently available crash data to identify crash patterns and trends in the City from 2017-2021 (see Attachment C of the Vision Zero Safety Study (2024)). Crash data is generated by LAPD using California Highway Patrol (CHP) CHP Form 555 Traffic Crash Reports that are sent to CHP for statewide reporting purposes, and then published in the SWITRS database. LADOT does not receive crash reports directly, and relies on the data published by SWITRS to assess crash trends and inform its work to improve traffic safety.

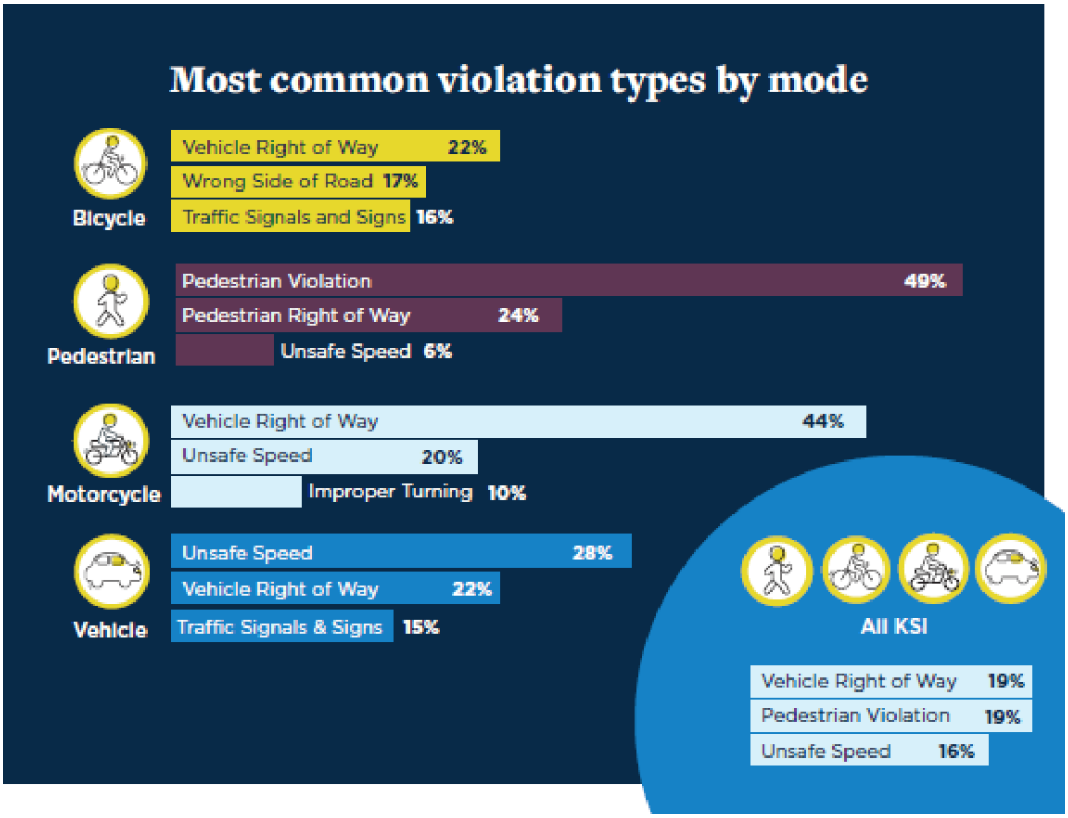
Between 2017 and 2021, the overall number of crashes that resulted in death or serious injury (KSI) increased 13 percent, and the overall number of fatalities increased by 20 percent. Overall, during this time period, the types of collisions and circumstances leading to fatal and severe injury crashes continue to be substantially similar to previous years, but the incidence of hit-and-runs has been increasing. From 2017-2021, hit-and-run crashes accounted for 29 percent of pedestrian- or bike-involved KSI crashes (compared to 22 percent in prior years).

Crash data published in the SWITRS database is inherently limited to the information LAPD collects in Form 555 Traffic Crash reports, and may be further limited for statewide reporting purposes. These forms collect data to note the primary vehicle code violation observed in the crash, as well as other factors that support law enforcement purposes. Using this information, the collision landscape analyzes KSI by mode, primary violation type, collision type, party actions that preceded the crash, time of day, and lighting conditions.

The collision landscape analysis of KSI by mode shows the proportion of vehicle crashes that occurred between one or more vehicles (vehicle), a vehicle and a pedestrian (pedestrian), a vehicle and a bicycle (bicycle), and a vehicle and motorcycle or one or more motorcycles (motorcycle). Notably, from 2017 until 2021 the proportion of KSI crashes occurring between a vehicle and pedestrian increased 53 percent citywide, representing 38 percent of all KSI in 2021. This disproportionate impact on pedestrians is underscored by reported commute trends, which show that only three percent of survey respondents in 2019 commuted to work on foot, while 79 percent commuted by vehicle.

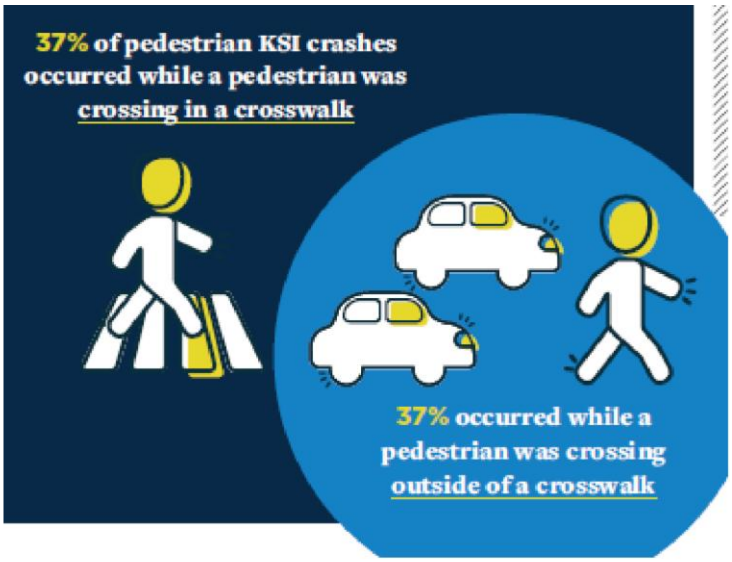


Form 555 considers any vehicle code violation to be the primary factor in a crash, and allows an officer to note other secondary contributing factors that ascribe fault. Across all modes, the most common violations in KSI crashes from 2017 - 2021 were vehicle right of way (19 percent) including drivers not appropriately yielding when turning, stopping, or entering the roadway/exiting driveways; pedestrian violations (19 percent) such as crossing outside a crosswalk, not yielding to a vehicle, or crossing against a red light. Broadly speaking, both vehicle right of way and pedestrian violations represent a driver or pedestrian not understanding, misinterpreting, or disobeying the basic right of way rules of the road, and affect every type of KSI. Better marking and signage, education, and enforcement may reduce these violations and improve overall safety. In line with the recommendations in the KPMG report, and pending both contractual and staff resources, LADOT will incorporate these findings into a multi-pronged education and awareness campaign.



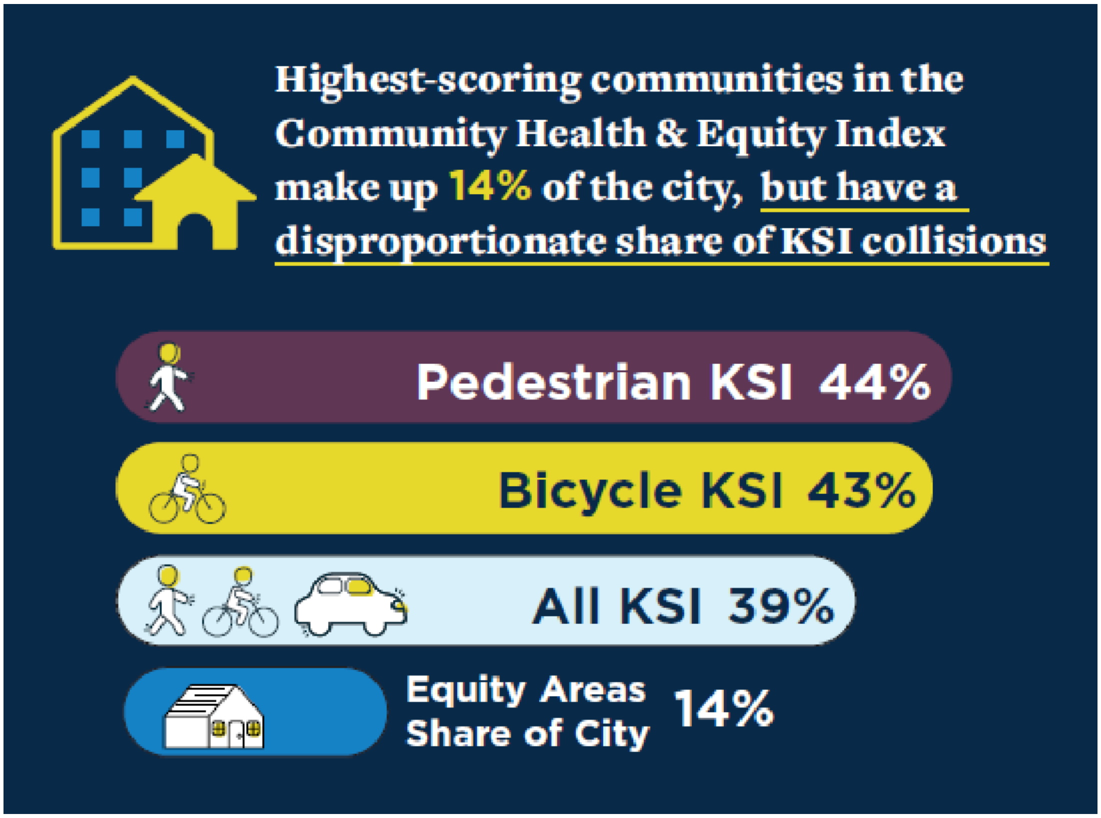
According to USDOT, a person hit by a driver traveling at 20 mph has a 90 percent chance of survival while a person hit by a driver traveling 40 mph has only a 20 percent chance of survival. While Form 555 does not specifically collect data related to vehicle speeds, the most commonly cited contributing factor in the data was unsafe speeds. LADOT's street design projects and safety treatments focus on reducing driver speeds, and recent legislative changes allowed LADOT to reduce speed limits on nearly 200 miles of City streets and pilot speed safety cameras to improve driver accountability and behavior. LADOT will continue to prioritize reducing speeds to improve overall safety, as unsafe speed is almost always a factor in fatal crashes across modes. Including vehicle speed as a standard data point collected in Form 555 reporting would improve data accuracy and provide a better understanding of how frequent and significant a factor unsafe speed is in KSI crashes across modes.

Form 555 data includes both the vehicle movement and the pedestrian actions preceding the crash. In a majority of crashes between vehicles and pedestrians – the highest share of KSI crashes in the period analyzed - drivers were proceeding straight at the time of collision (66 percent) and the pedestrian was attempting to cross the road (72 percent). Form 555 also notes whether a pedestrian was or was not crossing in a crosswalk, and in the data analyzed, there was no measurable difference between KSI crashes where the pedestrian was attempting to cross inside or outside a crosswalk. However, Form 555 does not differentiate between marked and unmarked crosswalks, and it is likely that a share of KSI where the pedestrian was noted to be outside a crosswalk include pedestrians attempting to legally cross at unmarked crosswalks. More robust data collection through crash reporting that differentiates between marked, unmarked, controlled, and uncontrolled crosswalks could better inform both street design to improve pedestrian safety and educational strategies to reduce driver right of way violations.



Time of day also impacted crash rates from 2017 - 2021. KSI crashes between vehicles and bicyclists were highest from 3:00 pm until 9:00 pm, while KSI crashes between vehicles and pedestrians were most frequent from 6:00 pm until midnight. KSI crashes between one or more vehicles varied less throughout the day, with the lowest rates occurring from 3:00 am until noon. Across all modes, the largest share of KSI crashes occurred in the evening hours between 6:00 pm and 9:00 pm.

Traffic crashes continue to disproportionately affect black and disadvantaged communities. While black residents represent approximately eight percent of all residents in Los Angeles, data for pedestrian- and bicycle-involved crashes in 2017-2021 show that 20 percent of these victims were black. LADOT does not have reliable access to race/ethnicity data for victims of crashes that do not involve pedestrians or bicyclists, but 22 percent of all KSI collisions from 2017-2021 occurred in Council Districts 8 and 9, areas that have higher concentrations of non-white residents and 39 percent of all KSIs occurred in areas scoring in the top quintile of the City's Community Health and Equity Index.

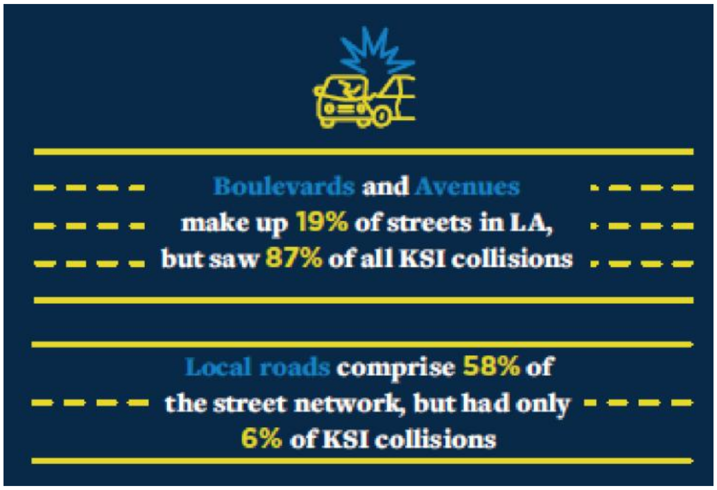


The findings included in the Safety Study Collision Landscape Analysis created the basis for a Systemic Safety Analysis and informed both the Countermeasures Toolbox and Priority Safety Corridor methodology, as described below.

Systemic Safety Analysis and Countermeasure Toolbox

Fehr & Peers also completed a Systemic Safety Analysis, which paired collision factors with roadway and built environment contextual to uncover systemic patterns for severe and fatal collisions across the City. This provides LADOT information on where, based on historical data, certain crash types are more likely to occur (see Appendix D of the Vision Zero Safety Study (2024)). This analysis looked at characteristics including 85th percentile speeds, average daily traffic (ADT), intersection design, and various roadway and land use classifications, as well as location information like Council District and disadvantaged community indices. Taken together, these characteristics reveal what types of crashes are most likely to occur based on certain conditions. For example, which roadway classifications, intersection types, land use contexts, or council districts see higher rates of pedestrian KSIs? Bicycle KSIs? Left turn crashes?

The systemic Safety Analysis found that KSI collisions across all modes occur disproportionately along roadways with multiple lanes in each direction, high traffic volumes, and observed 85th percentile speeds between 30 and 50 mph. Commercial land use accounts for the largest percentages of KSI collisions across all modes, and more than half of all KSI between vehicles and pedestrians, but it represents just five percent of the land use adjacent to the roadway network. KSI crashes across all modes also occurred disproportionately in disadvantaged communities, near transit stops, and near schools.



This analysis identified 24 unique Collision Profiles that highlight specific conditions that account for a large share of fatal and serious injuries. These profiles were then mapped to see where the top locations for these specific crashes and conditions were occurring and paired with a set of countermeasures - roadway design and other engineering safety strategies that have been shown to improve roadway safety outcomes under those conditions – to create a safety countermeasures toolbox.

The Countermeasures Toolbox expands on LADOT’s Vision Zero Toolbox and provides a more detailed and predictive approach to address specific behaviors and KSI crash types at locations where they will have the most impact. LADOT will develop an implementation plan, and will consult with the CAO’s office to develop a strategic funding plan, to apply these recommendations and deliver key safety treatments outlined in the Countermeasures Toolkit.

Program Evaluation

To understand the effectiveness of safety treatments installed in recent years, Fehr & Peers conducted evaluations on both individual treatments (such as crosswalks and traffic signal upgrades) and corridor-wide projects (including lane reconfiguration projects and Complete Streets projects) installed on the HIN.

For individual treatments, the study compared the average annual rate of pedestrian KSI at locations before and after installation to determine the effectiveness of the treatment. This evaluation focused on pedestrian deaths KSI due to the increasing rate of fatalities in KSI crashes between a vehicle and a pedestrian, and the ability for individual treatments to improve safety for the mode. The majority of vehicle and bicycle related KSI crashes typically occur in the context of a corridor versus a spot location, so are better treated and evaluated by corridor-level projects. The study found that the most effective are pedestrian hybrid beacons, with an average of 90-100 percent reduction in pedestrian KSI collisions post-installation, and protected left turn signal upgrades, with an average of 60-70 percent reduction in pedestrian KSI collision post-installation. The study also found overhead pedestrian flashing beacons (RRFBs), leading pedestrian intervals (LPI), and continental (high-visibility) crosswalks to be highly effective in reducing serious and fatal pedestrian crashes. Scramble crosswalks have also resulted in fewer pedestrian injuries, but there were limited existing locations to study. The evaluation showed that the least effective safety treatments are paddle signs and pedestrian flashing beacons (RRFBs) with striping only (no center median and no overhead element) across four lanes.

In combination with the collision profiles and the countermeasures toolbox, this evaluation will allow LADOT to focus our capital effort on only the most effective treatments, at the locations most applicable to those treatments. The evaluation also helps to identify existing assets that can be improved, along with those that need to continue to be added and evaluated.

The corridor projects evaluated included Adams Boulevard, South Broadway, Temple Street, and North Figueroa Street. The evaluation studies tracked changes in vehicle speeds for pre- and post-project periods, and found that speeds have gone down after project installation on all four corridors. There were notable reductions in severe and fatal crashes on Adams, Temple, and North Figueroa after LADOT installed the project. Many significant safety upgrades will be constructed on South Broadway through the City's capital improvement project, funded by the State's Active Transportation Program. This work will include both signal projects and concrete elements that will further safety benefits and continue to address severe and fatal crashes on the corridor. LADOT is also delivering additional near-term improvements based on the findings in the evaluation that have recently been implemented or will be implemented in early 2025.

2024 Priority Safety Corridors and Prioritization Methodology

LADOT developed the first LA Vision Zero HIN in 2015, and later updated in 2018 using more recent crash data. As part of the Vision Zero Safety Analysis, Fehr & Peers produced a methodology that was used to create an updated HIN, which will hereafter be referred to as the 2024 Priority Safety Corridors. Similar to the previous methodology to develop the HIN in 2015, the 2024 Priority Safety Corridors are based on collision data from the most recently available five years (in this case, 2017 - 2021). However, the 2024 Priority Safety Corridors also incorporated additional weight for known roadway and contextual risk factors. This method provides more proactive or opportunistic results, since it helps locate street segments that may not necessarily have seen a high number of KSIs during the study period, but have characteristics that make it more likely that these types of crashes could occur, such as high measured speeds, high amounts of pedestrian activity, or locations along a wider street. LADOT will use the 2024 Priority Safety Corridors as a basis for where to proactively focus safety work before deaths or serious injuries occur.

In addition to the overall 2024 Priority Safety Corridors, which account for crash patterns among all modes of travel, LADOT also identified Priority Safety Corridors specific to KSI by mode type - vehicle, motorcycle, bicycle, and pedestrian. LADOT can now refer to mode-specific priority corridors when considering projects or safety countermeasures that specifically serve certain road users. Many of the street segments on the mode-specific maps overlap with the overall Priority Safety Corridors, but there are also many street segments that appear only on a mode-specific map.

Every one of the 559 street segments on the 2024 Priority Safety Corridors has a score that combines the collision and contextual score (which determined the 2024 Corridors) with additional points to elevate street segments on a Mobility Plan Enhanced Network (i.e., Bicycle

Enhanced Network, Pedestrian Enhanced District, etc.). LADOT also applied the same scoring method to every intersection across the city. Ranking these scores results in a prioritized list of street segments and intersections, which will be used to inform LADOT's future work plan. Similar to the mode-specific HINs, this methodology also produced prioritization scores based on specific travel modes.

The methodology was also used to create a set of Safety Corridors that conform to the requirements of California Vehicle Code (CVC) 22358.7. While the 2024 Priority Safety Corridors will be used to inform LADOT's future work plan, the CVC compliant Safety Corridors will be used for the purposes of fulfilling requirements of California Assembly Bill (AB) 43 and AB 645 and be available for anticipated future usage.

LADOT recommends that the City adopt the new Safety Priority Corridors to prioritize traffic safety investments in street design and infrastructure projects based on existing crash data, equity, and other contextual factors. LADOT also recommends that the BOE, BSL, BSS, and LAPD incorporate these corridors into their own work planning to improve safety outcomes.

FINANCIAL IMPACT STATEMENT

There is no fiscal impact from these recommendations since the recommended appropriations come from within existing funding. Future year funding for the Vision Zero Program will be considered during the annual budget process.

FINANCIAL POLICIES STATEMENT

The recommendations in this report complies with the City Financial Policies in that changes to budget appropriations during the fiscal year shall be limited and subject to the review of the Mayor and the City Council.

MWS:SMC:06240035
LRC:MR:TC:PI:cr

Attachments

1. KPMG - City of Los Angeles Vision Zero Program Independent Evaluation
2. Fehr & Peers Vision Zero Safety Study

ATTACHMENT 1

KPMG

City of Los Angeles

VISION ZERO PROGRAM INDEPENDENT EVALUATION

REPORT | DECEMBER 1, 2023

kpmg.com

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1 EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

WHY THIS INDEPENDENT EVALUATION

This report is an outcome of the independent evaluation of the first seven years of the Vision Zero Program at the City of Los Angeles. The key objective is to identify the areas of improvement that can be implemented to reduce preventable deaths on City Streets. The evaluation investigated current uses of data, application of traffic solutions, overall city support and the regulatory environment, and lessons learned from peer cities.

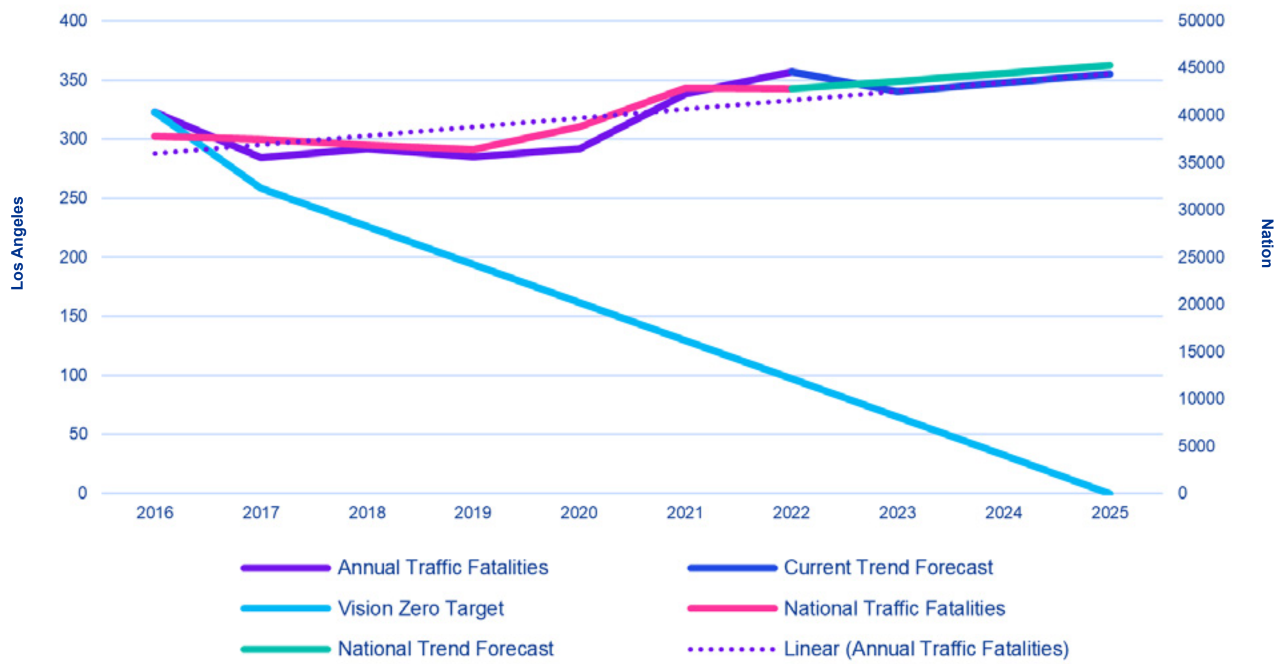
While the City of Los Angeles Vision Zero Program has not met its objectives to date, this report identifies some positive takeaways and needed processes that are currently underway. These are identified throughout the report. Other Vision Zero programs for large cities nationally have also struggled to reach the goals they have set for themselves, particularly during the pandemic and its aftermath. The other cities all continue to make Vision Zero a high priority moving forward.

THE CHALLENGE

A 2015 Mayoral initiative[1] officially launched the City of Los Angeles Vision Zero Program, aiming to eliminate traffic deaths in Los Angeles by 2025. Eight years into the program, despite significant investment and energy directed towards the problem, the City of Los Angeles has not achieved its goal of zero—total traffic deaths.

The City of Los Angeles did not meet the first two Vision Zero goals of reducing fatal and serious injuries and is not on track to meet the third goal of zero traffic fatalities by 2025, illustrated by the light blue line in **Figure 1** below. The City of Los Angeles experienced modest successes in the early years of the initiative (2016-2017) however since then the actual performance of the program has been flat or even rising slightly. The steady increase in traffic fatalities experienced in the City of Los Angeles is similar to the national trend, and is expected to remain so as shown in the graph below.

Figure 1: Progress Towards Zero Traffic Deaths



Source: The Statewide Integrated Traffic Records System (SWITRS)

[1] City of Los Angeles Executive Directive No. 10, Vision Zero, August 24, 2015

PEER EXPERIENCE

The Vision Zero Program was first implemented in 1997 by the Swedish parliament[2], being implemented shortly thereafter by other European countries such as Norway and the Netherlands. Since then, Vision Zero has been applied in various formats in countries/regions such as Canada, India, the United Kingdom, the Dominican Republic, and the European Union. As of August 2022, more than 45 communities[3] within the United States have pledged their commitment to Vision Zero principles, with the City of Los Angeles being one of the largest involved.

This independent evaluation examined the Vision Zero experience of peers of Los Angeles. The cities that participated in the survey included eight cities in the United States, one city in Canada, and one city in the United Kingdom. The cities surveyed were San Diego, California; San Francisco, California; Washington, D.C.; New York, New York; Houston, Texas; Phoenix, Arizona; Boston, Massachusetts; Seattle, Washington; Vancouver, Canada; and London, England. The results of all surveys are available in **Chapter 6**.

The peers surveyed all adhere to the same core principles, but recognize the need for their own localized solutions. Mayoral support was the most common reason for establishing a Vision Zero program, indicating that strong public support for residents was the likely impetus.

Since implementing Vision Zero, San Francisco, New York, and Boston have seen the most success in either reducing total fatalities per capita or having less growth than elsewhere in the nation. From 2015 to 2021, San Francisco's fatality rate decreased from 4.52 to 3.58 per 100,000 people, while New York experienced a small increase from 2.86 to 2.88 per 100,000 people. Boston experienced a lower increase than other peers from 2017 to 2021, going from 3.74 to 4.76 per 100,000 people, although there was a sharp increase from 2020 to 2021. Most of the peer cities also experienced an increase in fatalities following the Covid-19 Pandemic.

Successful strategies employed by these three cities include:

- Complete Streets improvements
- Bicycle network improvements
- Traffic signal improvements
- Improvements to collision database, to influence countermeasures and enforcement methods
- Investing in speed mitigation strategies (e.g., ongoing efforts to pass legislation discouraging speeding)
- Prioritization of community partnerships and community building efforts

London, despite having a very different system of governance than Los Angeles, also stands out as a Vision Zero leader given its integrated model of governance, "Healthy Streets" approach, and innovative use of technology and safety permissions to enter the city center.

PROGRAM HIGHLIGHTS

In response to the Mayoral initiative, the City of Los Angeles mobilized by creating a Steering Committee co-led by the Los Angeles Department of Transportation (LADOT) and by the Los Angeles Police Department (LAPD). A Task Force and Working Group were also created. The City of Los Angeles began funding the Vision Zero program, ramping it up between 2015-16 and 2017-18.

[2] https://actionvisionzero.org/resources/vision-zero-a-brief-history/

[3] https://visionzeronetwork.org/resources/vision-zero-communities/

With funding in place and support from the Mayor's Office, LADOT, developed a High Injury Network (HIN), a list of priority corridors and priority intersections. The City published the Vision Zero Action Plan in 2017. Most importantly, it identified a series of lower-cost countermeasures designed to reduce traffic injuries and fatalities and began to plan and implement those improvements on roadways identified in the HIN, working with other City Departments and Bureaus and the relevant City Council District(s). These projects typically fell within LADOT's purview to manage and control with support from the Bureau of Engineering (BOE) and Bureau of Street Services (BSS) as necessary. Example achievements in this area included (as of 2021):

Leading Pedestrian Intervals (LPIs)
813 installations

Pedestrian flashing beacons
79 installations

Left turn signals
111 installations

New signals
49 installations

LADOT eventually developed a Phasing strategy to deliver Vision Zero projects, with Phase 1 project representing the lowest cost and rapid installations, Phase 2 focused on traffic signals and other infrastructure also under LADOT control, while Phase 3 represents the most substantial and capital-intensive projects and requiring collaboration with various departments beyond LADOT.

In the last five years, the Vision Zero Program began to be hampered by several factors. Some of the key areas that led to decline in the effectiveness of the program included:

- The program lacked a clear governance, and priorities between the different stakeholders were not always in alignment.
- Tools to monitor and manage the program were not implemented, impacting transparency and justification for budget requests. Vision Zero Action Plan actions were not monitored and about half were not completed.
- Participation of key stakeholders declined over time (for instance, the Steering Committee stopped meeting in 2018, and so did the Task Force).

The City continued to mature its Vision Zero Program planning strategy, public outreach and also continued to deliver projects every year. The 2022-23 Vision Zero budget was $35.8 Million. LADOT is the largest recipient for Vision Zero budget (85%) with six other departments/bureaus sharing the remaining 15%. However, a substantial portion of the funds allocated to Vision Zero remain unspent in the following four budget accounts, ranging from 56% to 73%:

- Vision Zero education and outreach
- Traffic signals
- Bus stop security lighting
- Corridor projects

RESULTS

The table below provides the list of 13 findings across the following three evaluation areas:

- Uses of Data
- Application of Traffic Safety Solutions
- City Support

Scope Area	Findings
Uses of Data	**1.** The HIN and ad-hoc safety studies are used to identify the priority corridors, but the outcomes were not integrated into a comprehensive framework to inform decision-making impacting the timely implementation of Vision Zero Program actions and strategies. **2.** Inefficiencies in Los Angeles Police Department (LAPD) crash data collection and reporting processes are limiting the program's ability to plan and implement the Vision Zero strategies. These include but are not limited to the lack of an electronic reporting system for crashes and citations, and the lack of collection of all different types of crashes.
Application of Traffic Safety Solutions	**3.** There are no program policies, procedures, and governance frameworks to guide program staff and other involved parties on Vision Zero Program planning, implementation, and controls. **4.** While some major actions and strategies from the 2017 Vision Zero Action Plan were implemented, many others were not. **5.** The Vision Zero Program has delivered many safety treatments to date, but lacks a systemic planning element to support budgeting, project development, and a long-term roadmap to zero traffic deaths. **6.** The 2017 Vision Zero Action Plan outlined four components to reach the Vision Zero goal: engineering (innovative street design), education, enforcement, and evaluation. However, the program has become overly engineering-focused with very limited to no education, enforcement, or evaluation activities. **7.** Vision Zero has not been embedded in other department mandates, including those led by other city departments/bureaus, creating an ad-hoc approach to implementation of safety improvements. **8.** The current Street Design Manual is over 50 years old and is not set up to prioritize Vision Zero Program implementation. **9.** Vision Zero Program progress and delivery of City of Los Angeles actions are not monitored to understand how well they are doing to achieve their goals. This has resulted in a lack of program visibility and transparency. **10.** The Vision Zero Program has made efforts to embed equity in project selection and implementation, addressing previous investment disparities and promoting a more equitable distribution of resources. However, there is no systematic and holistic approach to planning and implementation of Vision Zero safety improvements in historically underinvested neighborhoods and for vulnerable road users.
City Support	**11.** The current regulatory environment limits City of Los Angeles' ability to accomplish the Vision Zero Program goals (e.g., red light enforcement, automated speed enforcement), but opportunities for improvement are on the horizon. **12.** Insufficient support from the Mayor's Office and City Council Districts has at times limited the effectiveness of Vision Zero Program delivery. **13.** LAPD participation in the Vision Zero Program has diminished over time, negatively impacting program goals.

The findings form the basis for the improvement opportunities presented here. Takeaways from the benchmarking provided further corroboration to the findings in the report and helped inform the improvement opportunities.

Benchmarking comparisons are benchmarking of the 10 large city Vision Zero programs in North America and in Europe throughout the report in addition to the Benchmarking section.

A summary of the 37 improvement opportunities is presented on the following pages, according to priority level (i.e. high priority, medium priority). The priority is based on relative impact to successful achievement of Vision Zero goals.

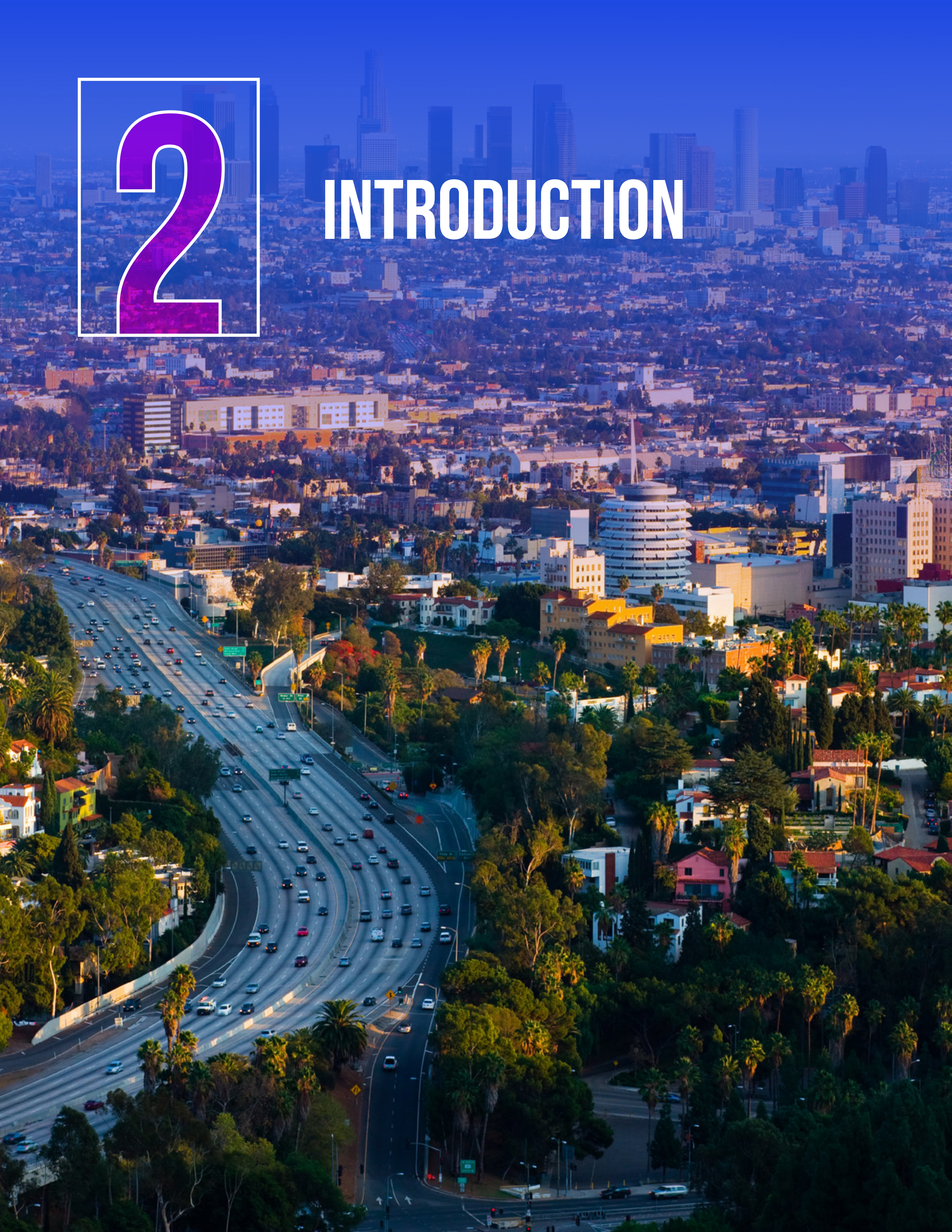
Scope Area	Topic Area		Improvement Opportunity		Priority
Uses of Data	1	Data-driven project selection	1.1	Develop stratified HIN sets and related improvements	High
			1.2	Develop frameworks to enable performance measurement	Med
			1.3	Develop locally calibrated Safety Performance Functions	Med
			1.4	Leverage new technologies	Med
	2	Crash data collection, storage, and retrieval	2.1	Digitize and maintain digital records of crashes	Med
			2.2	Analyze crashes to identify trends	High
			2.3	Abide by National Highway Traffic Safety Administration (NHTSA) guidelines	High
Application of Traffic Safety Solutions	3	Program governance	3.1	Establish a centralized program management function or unit utilizing existing resources	High
			3.2	Establish policies, procedures, and charter under new structure	High
			3.3	Re-establish Steering Committee/Task Force structure	High
	4	Performance and tracking of Vision Zero Action Plans	4.1	Reframe program goals	High
			4.2	Update Action Plan for 2024	High
			4.3	Develop annual performance measurement and monitoring	High
	5	Vision Zero planning, budgeting, and resourcing	5.1	Develop comprehensive Master Plan	Med
			5.2	Reform budget process	Med
			5.3	Develop individual plan for arterial corridors in HIN	Med
			5.4	Consider using private contractors	Med
	6	Balance of Engineering, Enforcement, Education, and Evaluation	6.1	Create safety emphasis areas	Med
			6.2	Develop education/awareness campaign	Med
	7	Integration with other city departments	7.1	Use Complete Streets framework as template and for Phase 3 projects	Med
			7.2	Coordinate with BSS for resurfacing and restriping	Med
			7.3	Consider housing long-range project development under Bureau of Engineering (BOE)	Med

Scope Area	Topic Area		Improvement Opportunity		Priority
Application of Traffic Safety Solutions	8	**City Street Design guidelines**	8.1	Update Street Design Manual	High
			8.2	Integrate detailed design requirements in Safety Toolkit	Med
	9	**Vision Zero Program progress**	9.1	Define internal and external reporting process and communication strategy	Med
			9.2	Develop balanced scorecard with targets	Med
	10	**Equity in project planning and implementation**	10.1	Update HIN and corridor methodology to focus prioritization on equity	High
			10.2	Explore holistic community-focused approaches	Med
			10.3	Provide special attention to projects impacting vulnerable road users	High
City Support	11	**Regulatory environment**	11.1	Support statewide actions for legislation and plan for automated speed enforcement	High
			11.2	Support the eventual use of automated red light cameras	Med
			11.3	Set up research program for new vehicle technologies	High
	12	**Mayor's Office and City Council role**	12.1	Establish clear and ongoing mandate from Mayor's Office	High
			12.2	Set up oversight processes	High
			12.3	Involve local businesses and residents in public outreach process	Med
	13	**Traffic safety enforcement**	13.1	Clarify the role of LAPD through the chartering process	High
			13.2	Devote significant additional resources to traffic safety enforcement	High

The full list of improvement opportunities is located in **Chapters 3, 4,** and **5** and again in **Appendix A**.

In summary, the City did not meet key goals that were set out, and needs major improvements to set itself on a path to success.

2 INTRODUCTION



INTRODUCTION

KPMG SCOPE OF WORK

This document represents the Vision Zero Program independent evaluation for the City of Los Angeles. The scope for this review includes the entire City's Vision Zero Program and related city traffic safety functions in all relevant program city departments/bureaus, for an assessment of effectiveness, leading practices and recommendations for improvement. The scope of services included four areas to be evaluated: (1) current uses of data; (2) evaluation of traffic safety solutions; (3) overall city support for Vision Zero and (4) benchmarking of other peer cities.

Ultimately, this report provides the Office of the City Administrative Officer (CAO) and other key stakeholders with a comprehensive and independent assessment of the Vision Zero Program's performance, progress, and challenges. This report contains an outcome-focused analysis followed by an improvement roadmap. This evaluation report is intended to be used as a tool for decision-making as it provides critical information on program strengths and weaknesses and opportunities for improvement.

WHAT IS VISION ZERO?

Vision Zero is a concept that no one should be killed or seriously injured in traffic, and that the transportation system should develop and implement policies and practices necessary for zero traffic fatalities.[4] As of September 2022, the Federal Highway Administration (FHWA) showcased 68 Vision Zero Action Plans for US cities.[5] The FHWA has subsequently adopted the Safe System Approach as a guiding set of principles for transportation system owners to consider as they work towards the zero-death goal. Those principles are:

In August 2015, the Mayor of Los Angeles issued Executive Directive 10, formally establishing the City of Los Angeles Vision Zero initiative. The directive prioritizes human life in the design of city streets and identifies strategies for how government and the public can partner to reduce traffic deaths to zero.

Vision Zero is a citywide program led by the City of Los Angeles Department of Transportation (LADOT), with support from multiple city departments and bureaus, including but not limited to the Bureau of Engineering (BOE), Bureau of Street Services (BSS), and Los Angeles Police Department (LAPD).

[4] Government Offices of Sweden, "Renewed Commitment to Vision Zero." https://visaozero2030.pt/wp-content/uploads/Renewed_Commitment_Vision_Zero_Intensified_efforts_transport_safety_Sweden.pdf

[5] Federal Highway Administration, https://highways.dot.gov/safety/zero-deaths/vision-zero

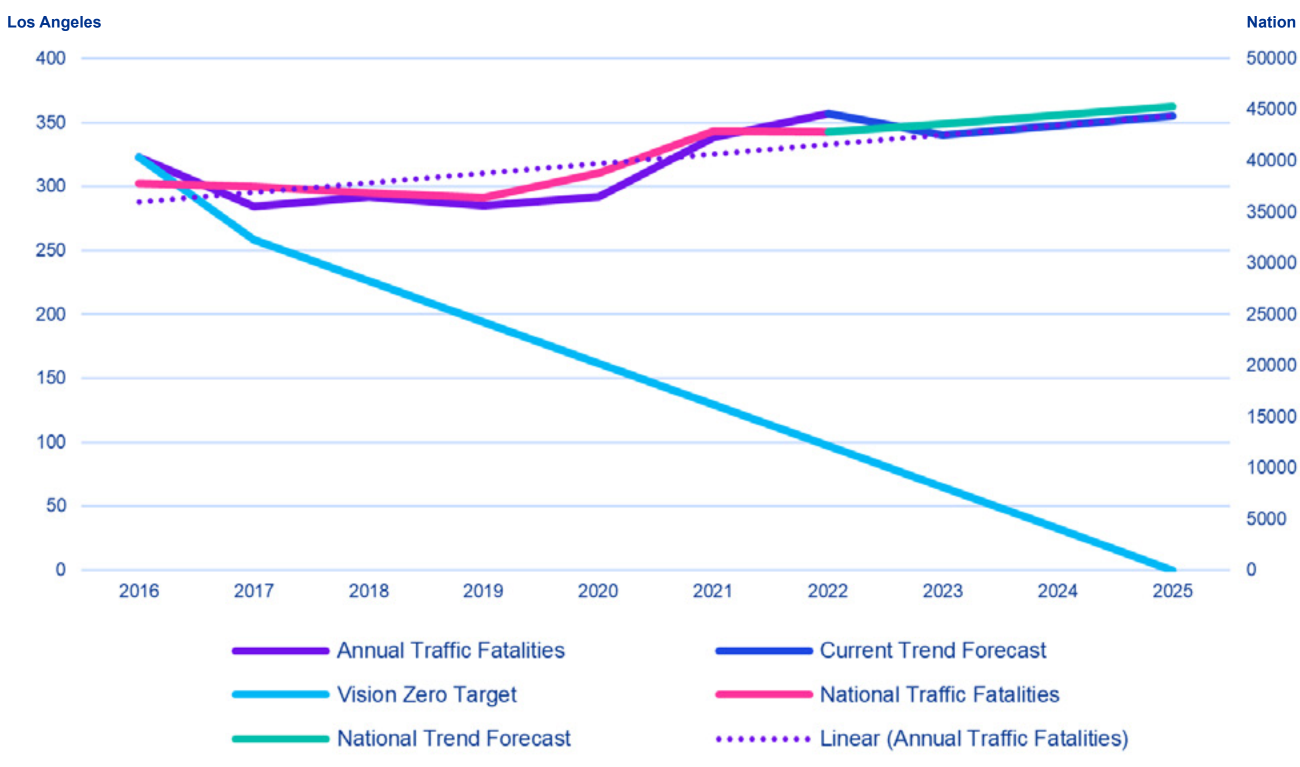
Success of the initiative was meant to be measured against the following benchmarks as outlined in the 2017 Vision Zero Action Plan (Council File 15-0546-S3):

- Reduce traffic fatalities citywide by 20% by 2017 (compared to 2016), prioritizing pedestrian fatalities involving older adults and children;
- Reduce fatalities by 50% by 2020 (compared to 2016); and
- Reduce fatalities citywide to zero by 2025.

The City of Los Angeles did not meet the first two Vision Zero goals of reducing fatal and serious injuries and is not on track to meet the third goal of zero traffic fatalities by 2025, illustrated by the light blue line in **Figure 1** below. Note the chart below shows absolute numbers of fatalities, not rates or ratios. During the pandemic, travel on the streets of Los Angeles was significantly reduced in terms of total trips and in terms of vehicle miles traveled (VMT), but the total number of fatalities did not diminish as one might have expected.

The City of Los Angeles did experience modest successes in the early years of the initiative (2016-2017), however since then the actual performance has been flat or even rising slightly. Trends over the past 5-6 years and projection to 2025 tracks pretty closely to the national trend forecast shown on the green line.

Figure 1: Progress Towards Zero Traffic Deaths



Source: The Statewide Integrated Traffic Records System (SWITRS)

A description of the key stakeholders involved with Vision Zero in the City of Los Angeles is presented next.

VISION ZERO KEY STAKEHOLDER ROLES

Los Angeles Department of Transportation (LADOT)

LADOT is the day-to-day lead agency for the Vision Zero Program. The general function of working to continuously improve traffic safety for the City of Los Angeles is something that LADOT always did in the past, but not as a dedicated program as it became in 2015 with Vision Zero. Organizationally, the Vision Zero Bureau reports to the Office of Project Delivery and Operations. In delivering the Vision Zero Program, LADOT works with many stakeholders but mainly the LAPD, BOE, BSS, BSL, Mayor's Office and City Council, and CAO.

Los Angeles Police Department (LAPD)

LAPD's principal role with respect to Vision Zero is that it represents the traffic enforcement authority for the City of Los Angeles. Road safety is a small, but important element, of the LAPD's broader mission to watch over public safety. This role is normally assigned to the traffic divisions and the most visible part of that traffic enforcement is the presence, in a given location, of patrol cars or motorcycles. A variety of strategies are deployed to enforce road safety laws, from speed checks to flooding some areas for Driving Under the Influence (DUI) or substance abuse checks.

In addition to physical enforcement of the surface roads themselves, LAPD has many other roles for Vision Zero. The citation and traffic crash reports they produce are critical to inform the Vision Zero Program. Through the data sharing efforts, LAPD and LADOT have collaborated extensively during the Vision Zero Program. LAPD has ongoing programs to outreach with community members to talk about public safety. Finally, over the past several years LAPD has actively pursued grant opportunities that can benefit Vision Zero (e.g., from the California Office of Traffic Safety (OTS); California Highway Patrol (CHP)).

Bureau of Engineering (BOE)

As the steward of the public right of way, the BOE is a key doer organization for Vision Zero. BOE handles the permitting and is the engineer of record for major capital projects, including Vision Zero projects. The implementation component of this role for the BOE involves construction management. The BOE also maintains the City's Street Design Manual, some sections of which were adopted in 1970. The BOE produced a Supplemental Street Design Guide in 2020 to address the need for more modern street configurations and to better account for complete streets principles and to better accommodate the Planning Department's Complete Street Design Guide from 2014.

The past 10 years or more have seen a paradigm shift in street design standards. Whereas in the past priority was placed on increasing throughput and VMT, the focus today is on safety, complete streets, first/last mile, resilience, among others. The BOE has struggled with a long effort to update the streets designs and standards. This is evidenced in some legacy projects that have been on the books for 15-20 years featuring major widening, which is at odds with the current Vision Zero philosophy of slowing down traffic. Some Grant-funded legacy projects have specifications making subsequent design changes difficult or impossible.

An accelerated effort to update the BOE design standards would impact dozens of decisions being made every day. The BOE's new City Engineer has expressed a desire to update the design standards.

Bureau of Street Services (BSS)

BSS acts as the contractor with the crews building the capital projects and has three divisions—Engineering Services, Construction Services, and Streets Renewal.

Vision Zero represents a tiny fraction of BSS' scope of work. They operate one crew equivalent for Vision Zero projects, though not fully dedicated to that program alone. Like other departments and bureaus, BSS suffers from an acute shortage of staffing (in April 2023 there were approximately 400 vacancies out of 1,250 staff, or 32%).

With a reduced number of crews, BSS reports competing priorities not only from different client departments but also from LADOT itself (i.e., between Vision Zero and other non-Vision Zero priorities).

In partnership with the BOE and BSS, the Vision Zero Program was able to:

- **Implement the Pedestrian Refuge Island Program –** Established collaboration with BOE and BSS to design and install concrete pedestrian refuge islands on the HIN. In the past 5 years the program has installed 48 refuge islands.
- **Support the Complete Streets Program –** The Vision Zero Program helped to establish a multi-agency collaboration to reconstruct streets and bring safety and accessibility improvements to corridors identified as highest need in terms of safety as well as pavement quality. To date, four Complete Streets projects have been completed (Venice Bl, Temple St, Roscoe Bl, and S Main St) and three others are in design or construction (Avalon Bl, Reseda Bl, and La Brea Ave).

Bureau of Street Lighting (BSL)

BSL is an active participant in the Vision Zero Program with respect to planning, designing, modeling, and evaluating the lighting component of street improvements with a focus on signal plans. On a typical project, BSL would produce the lighting plan that could accompany a LADOT signal plan (e.g., evaluation, design, and modeling of the lighting needs). LADOT drives this process for Vision Zero. Once a lighting plan is prepared, building and installation is either performed by a contractor, or it can be a joint project (LADOT can install poles and BSL installs the luminar arm and the fixture). On a typical year, BSL delivers Vision Zero projects on about 20 to 30 intersections. In another example, BSL examined all the cross walks in the City of Los Angeles for lighting improvements. Between 2019 and 2022, the goal was 75 cross walks, BSL delivered about 100 which exhausted location in the city.

BSL also participates in Vision Zero from an evaluation standpoint by reviewing Traffic Collision Reports issued by LAPD, with a focus on minimizing bicycle and pedestrian crashes. BSL also participates in the Vision Zero Engineering Working Groups. From a technology standpoint, BSL utilizes the most efficient lighting devices (LED) but is also attempting to address copper wire theft by strengthening circuits and related infrastructure.

Mayor's Office and Council Districts

Both the Mayor’s Office and the Council Districts are key Vision Zero stakeholders, for different reasons. The directive establishing the Vision Zero program required the Vision Zero Steering Committee to “work with my Office and City Council to report on Vision Zero efforts”.

The Mayor’s Office is where the initiative originated in 2015. The Mayor’s Office role is normally to govern and direct agencies and departments. Since 2015, the Mayor’s Office has always had one or more individuals responsible for overseeing the Vision Zero program, which spans multiple departments and bureaus.

The Los Angeles City Council is the legislative body of the City of Los Angeles. There are currently 15 members, each representing a single-member district. LADOT provides its annual Vision Zero program updates through the City Council, but throughout the year proposed Vision Zero projects are debated with the City Council jurisdictions where individual projects are located.

Office of the City Administrative Officer (CAO)

The CAO is a key support agency for Vision Zero through the budget process, and through its independent audit/ evaluation role. During the budget process, the CAO prepares the analysis and ultimately makes recommendations to the Mayor’s Office. Grants are an important funding source that are expected to be included in the Department budget requests. In addition, the CAO has run the independent program evaluation of LA’s Vision Zero Program.

The next section examines the regulatory environment for road safety in Los Angeles as well as legal and enforcement support.

REGULATORY ENVIRONMENT, LEGAL AND ENFORCEMENT SUPPORT

Regulatory Framework

The regulatory environment for Vision Zero in Los Angeles is generally comparable to other large and urbanized areas around the country. Other cities have implemented surface transportation safety strategies that are not available to or have failed in Los Angeles in the past, such as automated speed and red-light enforcement. Los Angeles experimented with red light enforcement in the early 2000s, but the program received significant public and political backlash and was ultimately halted in 2011.

The bulk of the regulatory ordinances and laws are local to the City of Los Angeles or set up at the state level in Sacramento. In many ways, Los Angeles remains a city where most residents depend on their automobile and there is hesitancy to adopt other modes of travel, even when available. Changing existing regulations, infrastructure, and the culture of driving to reduce VMT, and vehicle speeds are controversial and prone to strong opposition.

In recent years, there has been a flurry of new state bills that are likely to further Vision Zero goals.

State Bills

Recent successful relevant legislation has included:

Bill	Timing	Purpose	Likely Impacts on Vision Zero	
AB 43 (Local Speed Limits)	Passed 2020 (Became law January 2021)	Gives cities the ability to reduce local speeds by 5 mph. Los Angeles gained a retroactive ability to repeal recent local speed limit increases emanating from the speed survey 85% rule.	✓	Positive – affects 177 miles of city streets.
AB 1938 (Local Speed Limits)	Passed 2022 (Became law January 2023)	"Fix it" bill for AB 43. Clarifies certain provisions and sets threshold maximum for speed limit reduction.	✓	Positive, but City of LA has already repealed recent speed limit increases.
SB 347 (Driver Training)	Passed 2022 (Became law January 2023)	Mandates Commercial Driver's License training for 18-21 years old drivers.	✓	Positive especially given recent trends for drivers entering driving pool after 18.
SB 743 (VMT/Traffic Safety)	Passed 2013 (Fully in effect July 2020)	Replaces level of service (LOS) with VMT in California Environmental Quality Act (CEQA) analysis and establishes traffic safety as an environmental impact.	✓	Positive – Allows the City to incorporate traffic safety in project approval process.
AB 2147 (Freedom to Walk Act)	Passed 2022, became law Jan 1, 2023	Allows pedestrians to cross the roadway anywhere it is safe regardless of the presence of a sidewalk.	–	Neutral – emphasizes need to reduce vehicle speed.

For the City of Los Angeles, similar to most cities across the country, involvement in the statewide legislative process is led by the Office of the Mayor and City Council. Individual departments such as LADOT do get involved in testifying related to proposed legislation at times, but only with approval from the Mayor's Office.

Other relevant legislation includes:

Bill	Timing	Purpose	Likely Impacts on Vision Zero	
AB 645 (Automated Speed Enforcement)	The bill was signed by the Governor in October 2023.	Enforce local speed limits. Speed safety cameras mid-block take pictures of license plates, with a ticket sent to the vehicle owner (civil penalty, as opposed to criminal penalty, modest amount, no points on license). This is an opt-in, 5-year pilot program in five California cities including Los Angeles.	✓	Positive. Peer cities like New York City, Chicago, and Washington D.C. have implemented it. U.S. Industry research has shown a 19% reduction in likelihood that a crash results in a fatal or severe injury.
No bill (Red Light Enforcement)	Unknown.	Enforce red light stops.	✓	Positive.

Overall, the bills already implemented are expected to have positive (but hard to measure impacts) for Vision Zero goals. The automated speed enforcement bill AB 645 is the bill having the most potential for saving lives as documented with peer cities like New York City. The re-enactment of red-light enforcement in the City of Los Angeles also has the potential for saving lives.

Local Regulatory Environment

Implementation of local roadway safety regulation in the City of Los Angeles depends on the Mayor's Office and City Council. This section includes findings for traffic safety personnel roles, and recent/ongoing initiatives.

Traffic safety roles are mostly led by either the LAPD or by LADOT but there are very specific and limited roles for each department.

LAPD is the most visible and operates in four districts citywide—Central, South, Valley, and West. LAPD enforces traffic laws and only a LAPD peace officer can issue a moving violation. Vision Zero funds a small part of LAPD operations, $1.5 million per year.

LADOT has two main categories of field personnel related to safety—separate from parking enforcement:

- Crossing guards are hired by LADOT traffic officers and work primarily at schools in the Los Angeles Unified School District. In recent years the Los Angeles Department of Personnel has redoubled efforts to reduce the time it takes to fill a position and is streamlining the application process, but challenges remain in terms of vacancies (concerns roughly 200 positions, 40% of staff) and pay attractiveness is a challenge for this part-time job.
- LADOT traffic officers handle a variety of traffic tasks, such as addressing signal outages and helping manage special events. They can issue parking tickets but are not empowered to issue tickets for moving violations. The Bureau of Parking and Traffic Enforcement is the largest at LADOT, operates out of five zones, but like the crossing guard program is also subject to numerous vacancies.

In addition to legislation, several local initiatives (actual or proposed) are noted here. These are not evaluated but simply flagged as having the potential to further Vision Zero goals.

- ***Healthy Streets LA*** is a ballot initiative for 2024 sponsored by advocacy groups and neighborhood associations that is focused on speedier implementation of the 2035 Mobility Plan.
- ***Slow Streets LA*** is a program LADOT set up in May 2020 during the Covid Pandemic. Initially set up in response to some recreational facilities closures, the program's goal was to create an opportunity for people to stay physically active while socially distant by reducing speeding on neighborhood streets. The network of Slow Streets grew quickly to 50 miles in 30 neighborhoods in Los Angeles. In late 2022 City Council directed LADOT to focus limited resources on maintaining the existing 50-mile network until a broader strategy can be developed.
- ***Alternative Traffic Enforcement Study*** is a City Council-directed study led by LADOT to study and assess alternatives to armed traffic enforcement. The study presents a new civilian enforcement model could be complemented by LAPD and in tandem with "self-enforcing infrastructure" such as narrower streets and more clearly marked pedestrian crosswalks. Other cities like Philadelphia and Berkeley are experimenting with alternative traffic enforcement, but these are in the early stages.
- ***LA Metro's Policy and Action Plan for Street Safety, Data Sharing and Collaboration*** was adopted in June 2022 to coordinate and promote street safety through data sharing and collaboration across multiple agencies in LA County, especially considering the nexus to transit including rail crossings and bus stops. The policy references both LA's 2015 Vision Zero Plan and LA County's 2019 Vision Zero Plan.

In addition, in April 2023 the Transportation Committee unanimously passed two resolutions related to speed humps and crossing guards following two tragic school crashes.

- To study and report back on the feasibility of establishing a dedicated speed humps program for elementary schools, potentially expanding to all schools (knowing that there are over 400 elementary schools in the Los Angeles).
- To study and report back on improvements needed to fully staff the Crossing Guard Program, including using cash referral bonuses.

Taken together, these initiatives and resolutions are expected to modestly support Vision Zero goals.

Legal and Enforcement Support

Legal support for Vision Zero includes legal support from the City Attorney and enforcement support from LAPD:

Legal Support from City Attorney/ Litigation Support

LADOT has not reported any issue with the legal support provided by the City Attorney related to the Vision Zero Program. They feel they have been given the latitude to pilot and to try out new safety improvements such as the Leading Pedestrian Intervals (LPI) program.

Enforcement Support from LAPD and Other Entities

Enforcement supports the shared responsibility component of the FHWA's Safe System Approach along with engineering, education, and emergency response.

The 2015 Mayoral directive called for a Steering Committee under the joint direction of LADOT (chair) and the Police Department (co-chair) to coordinate, implement, and evaluate near-term and longer-term actions.

The initial activity and engagement that took place over the first two to three years of the initiative was robust and involved, however, that engagement has gradually declined after a period of three years:

- The Steering Committee met until mid-2018.
- In 2018, reacting to community pushback that some HIN communities were being over-policed, LAPD reduced efforts.
- Given limited resources LAPD stopped collecting and analyzing minor crash data in 2021 (e.g., minor injuries, property damage, hit and runs). LAPD is responding less to non-fatal crashes than in the past.

Enforcement support from LAPD for Vision Zero is a complicated issue. We have witnessed protests against the police departments nationally, especially after 2020, where a “Defund the Policy” movement is still felt in many communities as it impacts LAPD’s willingness to perform traffic stops. In recent years, risky behaviors have increased during and following the COVID-19 pandemic such as increased street racing and record levels of over 100 mph speeding instances. Tensions related to traffic enforcement by police has increased compared to prior years. The staff reductions of approximately 900 officers affecting LAPD through staffing cuts and voluntary departures are another factor. Based on the above factors, LAPD had to make deployment decisions given its competing priorities. LAPD has deployed fewer traffic safety personnel at a time when there is high level of risky behavior that would need to be targeted to support a core component of Vision Zero.

There does not appear to be a consistent LAPD strategy for traffic enforcement on the HIN as opposed to other, non-HIN city streets, though LAPD cites enforcement and extra patrols on the HIN. The short staffing of the Department means the primary focus is responding to 911 calls. In 2020, LAPD issued only 47.5% as many traffic citations as they did in 2016, and only made 51.6% the number of DUI arrests.

Barring changes from the ongoing alternative enforcement study, and AB 645, no department besides LAPD can legally enforce speeds in the City of Los Angeles.

EVALUATION METHODOLOGY

The independent assessment was conducted by an external consulting team with no prior involvement with the City of Los Angeles Vision Zero Program. The team was led by KPMG LLP with Kimley-Horn as a subconsultant.

The methodology used was typical for independent evaluations of this kind and included four main aspects:

The consultant project team worked closely with the CAO. Over 25 interviews were conducted with the following groups:

- Los Angeles Department of Transportation (LADOT)
- Mayor’s Office
- Office of the City Administrative Officer (CAO)
- Los Angeles Police Department (LAPD)
- Bureau of Engineering (BOE)
- Bureau of Street Services (BSS)
- General Services
- Bureau of Street Lighting (BSL)
- Bureau of Contract Administration (BCA)
- Los Angeles County Metropolitan Transportation Authority (LA Metro/Metro)
- Controller.

To aid with the analysis, governance, process, safety, and financial data sets were collected from the agencies listed as well as from the public domain. Study team members collaborated to formulate and corroborate the main findings, provide supporting analysis, and develop recommendations for improvement. Finally, outreach to 12 peers - 10 domestic peers and 2 international peers—provided additional insights and knowledge that could be folded back into the findings, as well as presented on their own.

HOW TO READ THIS REPORT?

Assessment findings are presented in accordance with the four scope tasks:

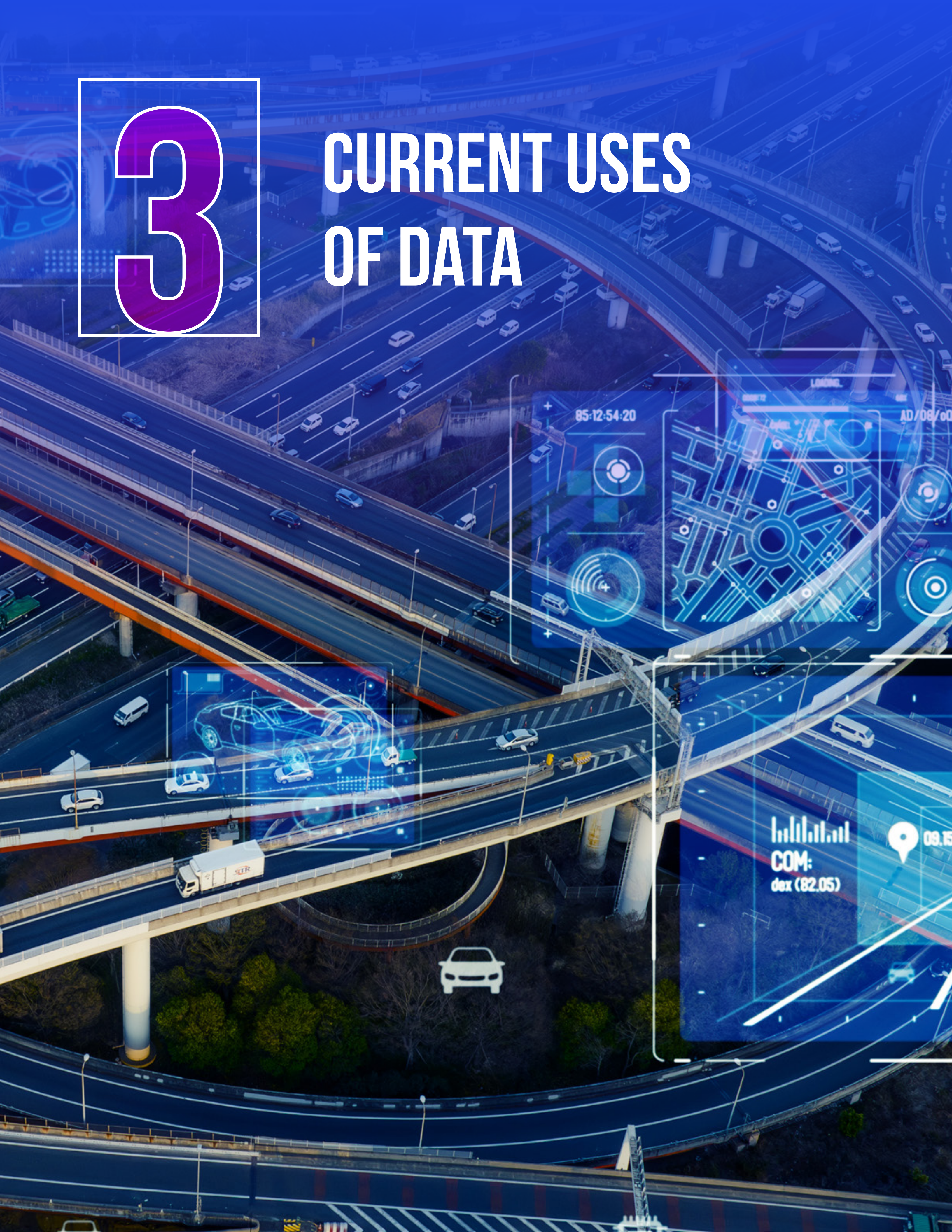
1. Current uses of data (**Chapter 3**)
2. Accurate and appropriate application of traffic safety solutions (**Chapter 4**)
3. Overall city support (e.g., legislative support, legal support) (**Chapter 5**)
4. Benchmarking (**Chapter 6**).

Within the first three chapters above, individual findings are organized as follows:

1. Topic Area – The general category for evaluation
2. Evaluation Criterion – The leading practice against which current practice was assessed
3. Finding Statement – A high-level summary of the gap identified
4. Supporting Evidence – Documentation of the facts and other evidence that led to the finding(s)
5. Improvement Opportunities – The discrete, actionable improvement opportunities to bridge the gap.

Benchmarking results, which served to inform the topic areas for applicable leading practices, are presented in **Chapter 6**.

3 CURRENT USES OF DATA



CURRENT USES OF DATA

BACKGROUND OF CURRENT USES OF DATA

This chapter presents the evaluation of the current uses of data to identify traffic safety problem areas, including the HIN and Priority Corridors, data types, and the use of data to determine effectiveness. Before highlighting the findings and improvement opportunities, below is the background information and summary of current uses of data in Vision Zero Program.

The initial objective of the Vision Zero Program was to reduce traffic fatalities citywide by 20% in 2017 in comparison to the baseline year of 2016, with a specific emphasis on protecting vulnerable road users such as older adults and children. Despite efforts to implement safety measures, the total number of fatalities decreased by only 12.3% between 2016 and 2017 (see **Table 1**), shy of the 20% desired reduction. Note that in that same year, fatal crashes in the United States declined only 0.5%.

The second milestone set by the Vision Zero Program was to achieve a 50% reduction in traffic fatalities by 2020, compared to the baseline year of 2016. During that time, Los Angeles lost some of the headway made in 2017 but was still 9.6% down from the 2016 base year.

While the City experienced fluctuations in the number of fatalities each year, there was no consistent downward trend. In 2021 the total number of fatalities in Los Angeles had surpassed the 2016 levels, indicating that the program did not achieve its reduction goals.

Finally, the most central objective of the Vision Zero Program was to reduce traffic fatalities to zero by 2025. The return to an upward trend in fatal crashes since 2019 shows the City is not on target to achieve the zero-death goal by 2025.

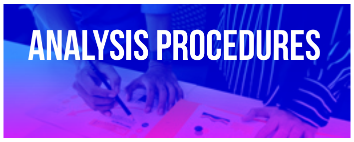
Table 1: SWITRS Traffic Fatalities by Category in the City of Los Angeles

City of Los Angeles Fatalities	Total	Pedestrian	Bicyclist	Alcohol- and Drug-involved	Distracted Driving	Speeding-related	Unrestrained Occupant	Older Adult	Motorcyclist
2016	323	135	21	111	12	118	21	60	65
2017	284	128	17	92	13	93	12	45	52
2018	292	132	22	90	8	90	37	46	37
2019	285	143	17	83	7	103	23	51	34
2020	292	124	12	126	9	101	45	51	50
2021	338	143	14	63	6	151	28	48	54
2022*	357	160	20	62	5	125	37	50	59

Note: *preliminary (2022 SWITRS data are not yet finalized)

Existing Practices

For this section of the Vision Zero assessment, a thorough review was conducted of the data sources currently used in the program, as well as a review of methodologies employed by stakeholders when determining Vision Zero projects. The following are the topics covered in this section:



Crash Data

In the Los Angeles area, the main sources for crash data are the LAPD, CHP, and reports submitted online to the LAPD by individuals involved in crashes that did not have police present. Since January 2021, LAPD are no longer required to respond to all crashes and are not required to file reports for all crashes, with changes reflected in the updated crash form published January 13, 2021[6] and codified by Special Order No. 22, 2021[7]. As stated in Section 415.05 in the LAPD Department Manual Volume IV, “A Traffic Crash Report, CHP 555 Form Set, shall be completed, when a traffic collision involves one or more of the following: Fatality; Suspected Serious Injury; Hit-and-Run with Injury; City Property Involved with possible City liability; and DUI.” Therefore, crashes involving a suspected minor injury, possible injury, or property damage only are not required to be reported by the LAPD.

From these primary sources, data are then uploaded and consolidated by the CHP into the Statewide Integrated Traffic Records System (SWITRS). As stated on their webpage, “The Statewide Integrated Traffic Records System (SWITRS) is a database that serves as a means to collect and process data gathered from a collision scene. The Internet SWITRS application (iSWITRS) is a tool by which CHP staff and members of its Allied Agencies throughout California can request various types of statistical reports in an electronic format.” However, the OTS began funding a project in 2003 created by the University of California Berkeley’s (UC Berkeley) SafeTREC. Since 2003, SafeTREC has been responsible for this project, named the Transportation Injury Mapping System (TIMS)[8], which provides a publicly accessible and user-friendly interface to view, query, and download a variety of crash data. SafeTREC is also the primary publicly accessible source of cleaning up crash data and geocoding (adding location data and placing crashes on a map) crashes, ensuring that all uploaded data are adhering to crash data quality standards.

However, even though crash data are uploaded daily to SWITRS, these data are still considered “provisional” and subject to change until they are finalized. Finalizing crash data is a process that can take several months, with SWITRS having the following disclaimer: “Due to collision records processing backlogs, SWITRS data is typically seven months behind. Data requested for dates seven months prior to the current data will be incomplete.” This backlog is also reflected in the TIMS interface, where 2022 SWITRS data were not geocoded and uploaded into TIMS until March 27, 2023. Furthermore, SafeTREC does not consider a dataset as “final” until the CHP releases their SWITRS Annual Report for the specific year, which has been happening approximately 18 months after the end of a calendar year. Currently, this means that data related to crashes occurring after December 31, 2020, are considered “provisional,” as the annual reports for 2021 and 2022 have not yet been released. While provisional data are still useful for identifying overall trends in crashes, they are still technically subject to change.

Based on the SWITRS data, there have been notable trends in SWITRS data regarding fatalities and serious injuries, as shown in **Table 2** on the next page. Compared to 2016, the total number of fatalities and serious injuries has shown some fluctuations but has generally increased, with a peak in 2021 before slightly declining in 2022. The number of pedestrian fatalities and serious injuries has seen some variation, but it remains higher compared to 2016. Similarly, for bicyclists it has remained relatively stable as well as older adults, motorcyclists, and speeding related incidents. However, there has been a decline in alcohol-involved fatalities and serious injuries since 2016, although there was a slight increase in 2021. Drug-involved fatalities and serious injuries fluctuated but showed an overall decrease. Fatalities and serious injuries involving unrestrained occupants have fluctuated.

[6] https://lapdonlinestrgeacc.blob.core.usgovcloudapi.net/lapdonlinemedia/2021/09/01_13_2021_OCOP-NOTICE_TRAFFIC-COLLISION-INFORMATION-FORM-043700_REVISED-1.pdf

[7] https://lapdonlinestrgeacc.blob.core.usgovcloudapi.net/lapdonlinemedia/2022/02/SO_22_2021_COMMUNITY_ONLINE_REPORTING_SERVICE_TRAFFIC_COLLISION_INVESTIGATION_AND_VARIOUS_RELATED_DEPARTMENT_MANUAL_SE.pdf

[8] https://tims.berkeley.edu/

Table 2: The City of Los Angeles SWITRS Data

SWITRS fatalities and serious injuries	2016	2017	2018	2019	2020	2021	2022*
Total	**1,877**	**1,915**	**1,982**	**1,954**	**1,862**	**2,266**	**2,088**
Pedestrian	567	595	611	659	556	697	631
Bicyclist	127	141	146	145	124	140	138
Alcohol-involved	285	229	281	258	248	280	250
Drug-involved	80	85	51	58	92	24	32
Distracted driving	90	87	85	103	75	74	59
Speeding-related	555	530	564	527	571	703	615
Unrestrained occupant	112	112	138	120	193	161	151
Older adult	205	200	220	217	166	212	206
Motorcyclist	410	411	429	393	366	433	415

Note: *2022 Report is not fully completed yet
Source: The Statewide Integrated Traffic Records System

In addition, **Table 3** below shows the OTS rankings for the City of Los Angeles based on victims killed and injured. The California OTS rankings are a system developed to compare the traffic safety statistics of different cities within California. The rankings allow individual cities to assess their own traffic safety performance by comparing it to other cities with similar population sizes. The ranking shows that Los Angeles has been leading in total fatalities and injuries in California until 2020. The serious injury and fatal ranking, increased from one in 2017 to five in 2020 showing that Los Angeles is achieving better traffic fatality and serious injury results than some of the other large cities in California. In summary, the trends that require particular attention include the overall increase in killed and injured bicyclists, and pedestrians, especially those under 15.

Table 3: City of Los Angeles California Office of Traffic Safety Rankings

Type of crash	2017	2018	2019	2020	City	2020 rank
Total fatal and injury	1	1	1	5	**Sacramento**	**1**
Alcohol involved	3	1	1	6	**Long Beach**	**2**
Had been drinking driver < 21	2	1	1	6	**Oakland**	**3**
Had been drinking driver 21 – 34	2	2	2	5	**Stockton**	**4**
Motorcycles	4	4	5	8	**Los Angeles**	**5**
Pedestrians	4	4	4	4	**Anaheim**	**6**
Pedestrians < 15	5	4	5	2	**Riverside**	**7**
Pedestrians 65+	4	4	4	4	**Bakersfield**	**8**
Bicyclists	7	6	6	5	**San Francisco**	**9**
Bicyclists < 15	1	6	6	3	**Chula Vista**	**10**
Composite	1	1	1	6	**San Diego**	**11**

Source: The Statewide Integrated Traffic Records System

Traffic Data

Traffic data is a key component of assessing potential safety needs. It shows where the most people are traveling and can help determine the level of exposure people have to safety challenges and can allow the calculation of rates, which in turn lets planners understand the risk a roadway user faces at a given location. VMT, which is a measure of the total miles of vehicle travel on a corridor or in an area is one important metric and is tied to the inclusion of safety as an environmental impact. This can be normalized with population data to better assess how many crashes are happening relative to the amount of travel that is occurring. It is also useful for comparing traffic volumes and vehicle trips between areas within the city or against other peer cities and neighborhoods. State and federal reporting of these data are typically only collected on major roads, excluding most roads not maintained by federal programs, as VMT is collected and reported by the FHWA on a monthly basis (see **Table 4**). VMT and traffic counts also allow the city to calculate crash rates which can get to the amount of risk a given road user is exposed to while using a certain facility rather than only looking at the risk that a certain facility has that a crash will occur on it.

Table 4: VMT Data from Caltrans 2020 Road Data Report for the Highway Performance Monitoring System (HPMS)

2020 HPMS Estimated Daily Vehicle Miles of Travel by Urban Area and Functional Classification (in Thousands)								
Urban	PRINCIPAL ARTERIAL			Minor Arterial	Major Collector	Minor Collector	Local	Daily Vehicle Miles of Travel (1,000'S)
	Other							
	Interstate	Fwy & Exp	Other					
Indio-Cathedral City	2,210.50		2,007.42	1,897.72	1,013.73	2.25	444.32	7,575.94
Lancaster-Palmdale		924.57	1,591.39	2,007.00	653.82	0.45	507.69	5,684.91
Livermore	1,413.31		365.46	390.26	189.42		114.50	2,472.95
Lodi		888.91	167.28	164.99	180.75	0.14	75.20	1,477.26
Lompoc			252.92	60.44	141.45		52.52	507.34
Los Angeles-Long Beach-Anaheim	72,738.63	50,184.07	53,597.98	34,325.98	14,313.69	45.02	10,176.23	235,381.60
Madera		525.72	65.36	264.62	101.89	0.04	18.34	975.96
Manteca		1,548.13	187.54	126.21	141.38	0.55	99.76	2,103.59
Merced		661.67	490.18	402.36	218.75	1.14	168.37	1,942.46
Mission Viejo-Lake Forest- San Clemente	4,400.59							

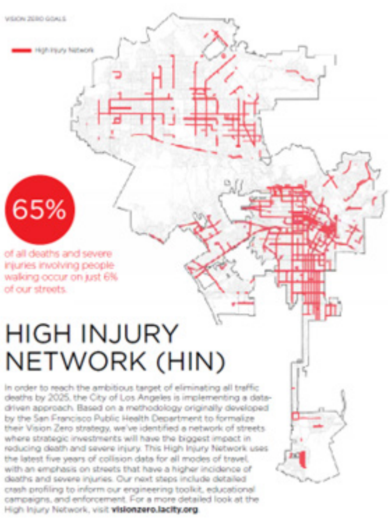
Source: Caltrans, Highway Performance Monitoring System

VMT measures impacts to vehicle traffic and how quickly cars can move on a stretch of roadway, and it was the primary metric used to approve development and roadway improvement projects by cities, counties, and Caltrans, including the City of Los Angeles. Starting in 2013, SB 743 paved the way for California to transition away from LOS when determining environmental impacts to meet California Environmental Quality Act (CEQA) standards, and as of July 1, 2020, all CEQA projects were required to use VMT rather than LOS.

This meant that a project's impact would consider multimodal transport such as public transit and biking, and that a new project located near multimodal transportation would have less environmental impact than a more isolated project due to greater access to multimodal transport. If a housing development is located near a light rail station and bike lanes, the impact related to VMT would be minimal, as there is ample access to transit. However, if using traditional LOS, the impact would appear more significant, as the number of vehicle trips generated by this new development would prompt wider streets and more miles of roadway to handle the capacity of vehicles, effectively ignoring the innate benefit of the nearby transit options.

These are then tied back to traffic safety as SB 743 also designates traffic safety impacts an environmental impact, particularly where additional risk is placed on pedestrians and cyclists. This gives the City of Los Angeles more opportunity to require private contractors to address traffic safety in the environmental clearance process.

Figure 2: HIN Map from 2017 Vision Zero Action Plan



Roadway and Transportation Data

In addition to automated traffic counts on major roadways, there are many other important datasets currently being collected by the City and hosted online using GIS. These GIS data are available in several places, through Caltrans[9] and Los Angeles GeoHub[10], and include relevant transportation data such as sidewalks, streets, bikeways, transit networks, and much more. All these data are publicly available and are used in a wide variety of analyses and are useful in determining the locational context of a project. Transportation GIS data is primarily maintained by the LADOT, while other demographic and business-related GIS data are maintained by other departments within the City and County of Los Angeles.

Analysis Procedures

With advancements in technology and data collection methods, GIS data has been the primary source of transportation and traffic analysis for municipalities in recent years, as multiple datasets can be compared simultaneously in a single map. This also allows more in-depth analysis to occur when selecting transportation projects, and for determining baseline conditions for wide-reaching programs such as Vision Zero.

One of the primary datasets used in the Vision Zero Program is the HIN[11], which is designed to highlight stretches of roadway with a disproportionate number of fatal and serious injury crashes involving non-motorized users (pedestrians, bicyclists, etc.). The HIN was created by the LADOT in 2016 with the launch of the Vision Zero Program and used finalized crash data from SWITRS from January 2009-December 2013 to determine the streets with the highest concentrations of fatal and serious injury crashes involving bicycles and pedestrians. From these data, the Vision Zero team stated that "65% of all deaths and severe injuries involving people walking occur on just 6% of our streets."

[9] https://www.lapdonline.org/office-of-the-chief-of-police/office-of-special-operations/transit-services-bureau/traffic-collision-questions/

[10] https://lapdonlinestrgeacc.blob.core.usgovcloudapi.net/lapdonlinemedia/2021/09/01_13_2021_OCOP-NOTICE_TRAFFIC-COLLISION-INFORMATION-FORM-043700_REVISED-1.pdf

[11] https://lapdonlinestrgeacc.blob.core.usgovcloudapi.net/lapdonlinemedia/2022/02/SO_22_2021_COMMUNITY_ONLINE_REPORTING_SERVICE_TRAFFIC_COLLISION_INVESTIGATION_AND_VARIOUS_RELATED_DEPARTMENT_MANUAL_SE.pdf

The HIN was later refined even further with the addition of “Priority Corridors” in the 2017 Vision Zero Action Plan, which identified 40 locations on the HIN that have the highest concentrations of KSI crashes where corridor improvements would be prioritized. “The vast majority (70%) of KSI collisions occur at intersections rather than mid-block locations. These intersection-based collisions tend to be along high-collision corridors rather than focused at a few locations, suggesting that corridor-level treatments, especially those targeted at reducing speeding, are likely to be more effective at eliminating fatalities compared with spot-level treatments scattered throughout the City.” 23 additional priority corridors were identified in 2019, following the same methodology as the 2017 addition to include intersections with the most fatal and serious injury crashes. Priority corridors were created to encompass as many High-Injury Intersections as possible, as LADOT prioritizes these locations when installing roadway improvements to provide the most public benefit.

DATA USE SUMMARY

A key strength of Los Angeles Vision Zero is the data-driven nature of the program, which allows crash data to be the primary factor in choosing new locations for safety improvements. This process is one of the core strengths of the program, as it allows a more equitable distribution of safety funds across the city and addresses the issue of non-investment in vulnerable areas. This crash data is typically weighted by the severity of the crash, ranging from fatal crashes as the most serious to property damage only crashes being the least serious.

While not the only factor in determining safety needs, enhancements to crash data collection, storage and retrieval capabilities will facilitate future updates to Vision Zero priorities and will allow more timely and accurate monitoring of safety conditions.

Interviewees identified that Los Angeles has done well in identifying the causes of fatal and serious injury crashes with expanded outreach efforts and analyzing crash data to determine listed causes of crashes. Speed was determined to be the primary factor in the severity of injuries in crashes, especially for pedestrians and bicyclists. Larger and heavier vehicles as well as increases in aggressive driving behavior were also identified as factors contributing to fatal and serious injury crashes.

From these data and outreach efforts, locations for pedestrian and bicyclist improvements were chosen and implemented, including LPIs, narrowing roadways with paint lines, and restriping crosswalks. These were identified as “Phase 1” treatments, meaning that they are easier to install quickly and are cost-effective, as well as being limited to small areas with high concentrations of fatal and serious-injury crashes. More comprehensive improvements typically involve more robust infrastructure installations and modifications, which is why Vision Zero developed the HIN and priority corridors/intersections to better target high concentrations of crashes. Interviewees echoed how HIN and priority corridors/intersections resulted in a more effective use of resources by allowing agencies to focus their resources in a more efficient manner. With these priority areas identified, speed enforcement and comprehensive infrastructure improvements could be made in a more impactful way. Furthermore, identification of these areas assists in safety programs beyond Vision Zero, as other safety grants such as Active Transportation Program (ATP) utilize these data to justify safety improvements in their own project areas.

While determining overall program value as it relates to reducing crashes—as this can be challenging without more than five years of data—interviewees expressed positive results from projects already installed or currently underway. One of the primary benefits expressed is that of equity, as the data-driven approach allowed safety improvements to be installed where they were most needed based on crash data rather than solely on public outcry. This has allowed improvements to be installed in historically underserved communities citywide.

This **evaluation resulted in two finding areas** for current uses of data, as follows:

- **Data-driven project selection**
- **Crash data collection, storage, and retrieval.**

TOPIC AREA 1: DATA-DRIVEN PROJECT SELECTION

EVALUATION CRITERION: Regularly updated and tiered HIN, corridors, and intersections are used to drive Vision Zero program efforts. The outcomes are integrated into a comprehensive framework to inform decision-making.

FINDING 1: The HIN and ad-hoc safety studies are used to identify the City's priority corridors, but the outcomes were not integrated into a comprehensive framework to inform decision-making, impacting the timely implementation of Vision Zero Program actions and strategies.

Vision Zero is a data-driven program. Vision Zero investments target roadway and intersection characteristics that been shown to contribute to traffic fatalities in the city in a systemic way, with the goal of retrofitting infrastructure with safety upgrades as resources allow. Larger investments are made in locations with proven crash histories and targeted to enhance safety and equitable mobility. Crash data is used to define a HIN, while demographic and roadway data are used to define a high-priority network from the HIN. This methodology minimizes innate biases that are present in typical project selection processes, as locations are chosen and prioritized based on crash and traffic data and prioritized by neighborhood need rather than subjective reasoning. This also means that the effectiveness of the project selection process relies heavily on the quality and frequency of data and having a reliable source of data crucial for effective decision-making.

LADOT uses a three-phase project designation for Vision Zero initiatives. Phase 1 projects are typically small local projects that do not require physical changes to the roadway beyond roadway markings and signs. Phase 2 projects are generally larger in scale and involve modifications to traffic signals. Phase 3 projects are the most substantial and typically involve physical roadway changes. These are described in more detail in Topic Area 5. The HIN provides LADOT with a means to prioritize the larger phase 2 and phase 3 investments, while lower-cost phase 1 investments are implemented more systemically.

In 2015, the Mayoral Directive was issued to address this challenge and requested the development of uniform processes for interdepartmental data collection and publishing. The directive aimed to enhance the utilization of data in identifying, prioritizing, and evaluating projects, as these data are used throughout the entire project lifecycle. Initially, various data sources, including crash data; information about involved parties such as pedestrians, cyclists, and seniors; and the city's Health and Equity Index, were utilized. However, in 2019 and 2021, the approach was revised to primarily focus on crash data during the initial stages of prioritization, while incorporating additional data sources during more detailed planning.

The Vision Zero Program has developed a list of corridors and projects that are periodically reviewed and approved by the City Council, with a focus on enhancing transparency in investment decisions and addressing the needs of underserved communities. Priority corridors are updated every few years, and they may or may not include Priority Intersections. Data are utilized to identify the HIN, which is defined as the 500 miles with the highest number of fatal and serious injury crashes out of the approximately 7,000 miles of streets. Priority corridors are a subset of the HIN. The HIN has remained consistent since 2015, but efforts are underway to update it to reflect more current conditions.

The priority corridors were initially established based on the HIN in 2017, and additional corridors and intersections were added in 2019 and 2021. The 2019 update incorporated connecting segments from high-crash locations and considered equity concerns. It also included ongoing projects to ensure continuous safety improvements.

LADOT has work underway to refresh its HIN and priority corridors. The HIN update is expected to have up to six different HINs: one general-public-facing HIN, and five modal-specific HINs (vehicle, motorcycle, bicycle, scooter, and pedestrian). The additional HINs are expected to help identify mode-specific interventions where appropriate. The priority corridor update will build on the 2021 work by considering two additional methodologies and thresholds:

1. **Inclusion of near miss data.** LADOT has been working with a vendor (MicroTraffic) to collect information on near misses at key intersections in the City. This information is being considered as an input into future priority corridors.
2. **Increase focus on underserved communities.** Past priority networks considered underserved communities, but were subsequently more driven by crash data. The updated HIN identification process may return that focus.

ELECTRONIC CRASH RECORDS SYSTEM

There are tools available to allow field officers to enter crash reports digitally and automatically transmit information back to a centrally kept crash database. A system like this would reduce workload, reduce transcription error, allow less time spent per report, allow more information to be captured, and make it easier to query crash data for specific analysis. Some of the available software packages include the ability to perform Highway Safety Manual network screening analyses natively within them, which could support more frequent monitoring of a HIN or priority corridor network.

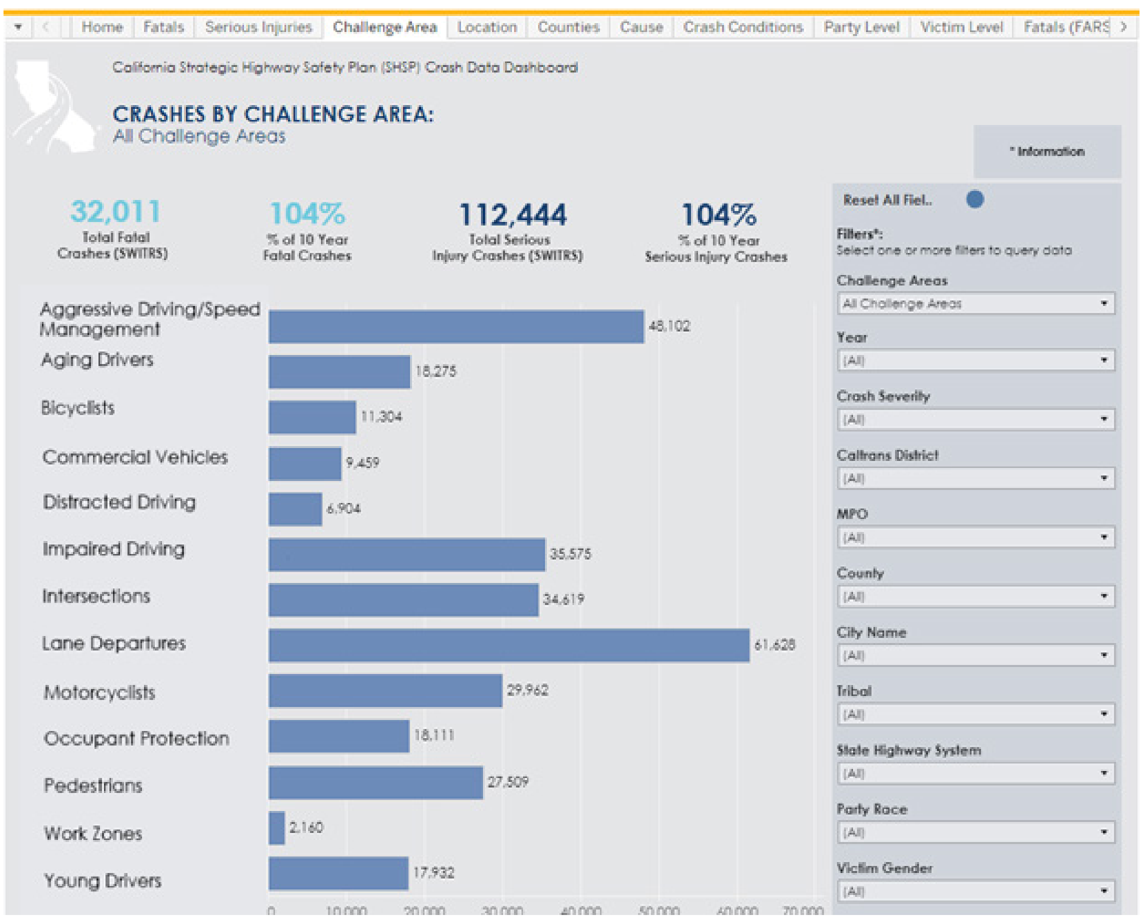
Systems such as Crossroads, Intersection Magic, Brazos, or others have crash mapping and diagramming capabilities to facilitate visualization of crash histories and patterns.

The start-up cost and effort for systems like these can be high, making it a challenging initiative to start. However, potential grant sources exist to help police departments modernize their safety data collection such as the Traffic Records Improvement Grant Program from OTS.

Safety Dashboarding

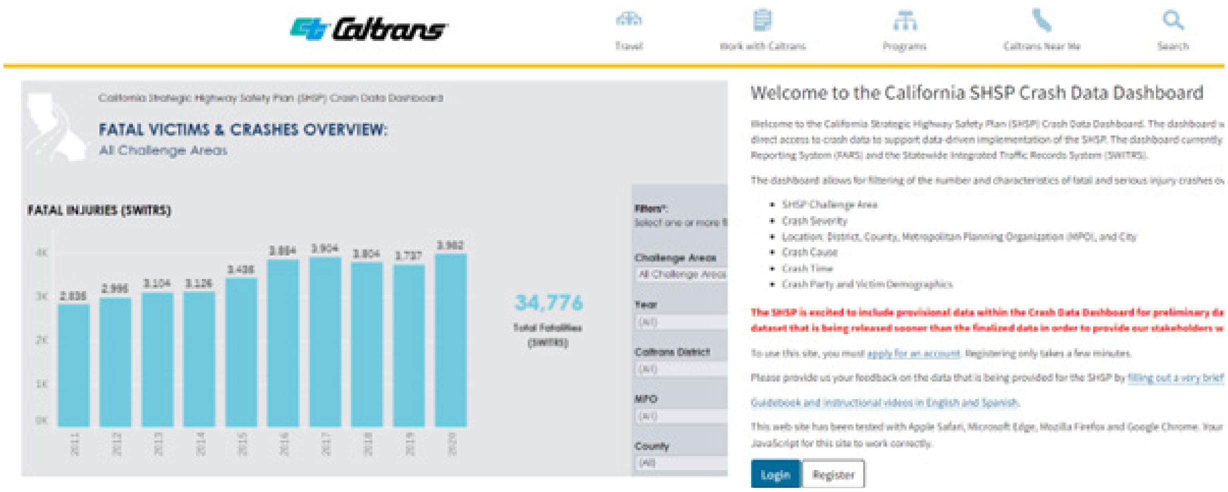
There is a long-term commitment to reviewing Killed or Seriously Injured (KSI) data, which help maintain the prioritization process. The program is transitioning from solely ranking projects based on the quantity of KSI incidents to considering rates (i.e., KSIs per mile), thereby identifying smaller projects with better safety outcomes. The images in **Figure 3** below and **Figure 4** on the next page are examples of the Caltrans Safety Dashboard that provides an overview of crash activity and can show progress in reducing fatal and serious injury crashes.

Figure 3: Caltrans Safety Dashboard – Illustrative



Source: Caltrans

Figure 4: Caltrans Safety Dashboard – Illustrative



Source: Caltrans

Before-and-After Evaluations

The post project studies conducted to assess the effectiveness of implemented measures have limitations, including inconsistent before-and-after analysis and the absence of cost-benefit analysis, which can hinder accurate evaluation and understanding of the interventions' impact. LADOT currently uses their Safety Toolkit for determining the cost, effectiveness, and time of each safety improvement. This document was prepared in 2019 for 15 different types of safety improvements. Even though this document gives the Vision Zero planning teams an initial idea about the cost and effectiveness of a specific intervention by providing low-medium-high and short- medium-long assessment, it is very high level and does not provide any "after" data such as the associated reduction in crashes, changes to vehicle speeds, or the reduction in conflicts with moving vehicles. According to the interviews, there is no assessment that they rely on for understanding the cost and benefit of safety improvements.

LADOT has work underway to evaluate the impact of previous installations. The purpose is to evaluate if the suite of countermeasures has successfully reduced risk and possibility of serious injury or harm. The intent is a before-and-after assessment of four corridors in Los Angeles, intersection treatments or other pedestrian crossing facilities, and one bicycle facility.

A consistent approach before/after evaluations for the entire program would assist the Vision Zero Program management team in determining the effectiveness of safety improvements. This in turn will inform decision-making (e.g., budgeting and funding, project planning and approval, and coordination).

IMPROVEMENT OPPORTUNITY 1.1

Develop stratified HIN sets: Create subsets within the HIN that focus on specific crash characteristics such as crash geometry, involvement of vulnerable road users, or roadway conditions, in addition to fatal and serious injury crashes. In addition to the benefits for planning more targeted treatments, this will enable the LAPD to prioritize resources to areas where specific crash types are more prevalent. By targeting these areas, Phase 2 and 3 improvements can be implemented where they are needed most.

Phase 1 improvements should be implemented proactively where appropriate citywide based on observed characteristics associated with crashes rather than focusing on existing hot spots. Update the HIN at regular intervals to capture changes in crash patterns due to the impact of improvements and land uses.

IMPROVEMENT OPPORTUNITY 1.2	LADOT or the office responsible for managing the program in the future should create a robust database and associated frameworks to enable performance measurement and continuous improvement, including before-and-after assessments conducted at least a year after the improvement becomes active. This will also enhance transparency between the program implementation teams, the CAO, and Mayor's Office in the context of program's performance, interagency and external coordination support, decision-making, and alignment with other relevant projects.
IMPROVEMENT OPPORTUNITY 1.3	Develop locally calibrated Safety Performance Functions (SPFs). SPFs provide an expected number of crashes that a given facility could experience based on the performance of similar facilities in the City. Once calibrated locally, SPFs allow for predictive crash analysis that is not dependent on actual crash data and avoid the variations seen every year by traditional black spot analysis. These will use the broader safety trends in the City of Los Angeles to help estimate future risk associated with roadway types, and the likely safety outcomes of future roadway projects that will change roadway configurations. These predictive measures will help the city become more proactive in safety project implementation.
IMPROVEMENT OPPORTUNITY 1.4	Leverage newer technologies that allow enhanced data collection such as near-miss detection at intersections, big data sources that measure multimodal traffic activity, and other similar data that refine risk assessments and can help prioritize Phase 3 and other larger investments.

TOPIC AREA 2: CRASH DATA COLLECTION, STORAGE, AND RETRIEVAL

EVALUATION CRITERION: For best results, Vision Zero requires fully automated crash data collection for all crashes including minor crashes and near misses.

FINDING 2: Inefficiencies in LAPD crash data collection and reporting processes are limiting the program's ability to plan and implement the Vision Zero strategies. These include, but are not limited to, the lack of an electronic reporting system for crashes, and citations, and the lack of collection of all different types of crashes.

LAPD currently uses handwritten and paper data entry for citations and crash reports. This makes the process more data intensive and reduces the accuracy and reliability of injury record data and enforcement activity. Since January 2021, LAPD is no longer required to respond to all crashes and is not required to file reports for all crashes[12], with changes reflected in the updated crash form published January 13, 2021[13] and codified by Special Order No. 22, 2021[14]. As stated in Section 415.05 in the LAPD Department Manual Volume IV, "A Traffic Crash Report, CHP 555 Form Set, shall be completed, when a traffic collision involves one or more of the following: Fatality; Suspected Serious Injury; Hit-and-Run with Injury; City Property Involved with possible City liability; and DUI." Therefore, crashes involving a suspected minor injury, possible injury, or property damage only are not required to be reported by the LAPD.

Manual recordkeeping increases police workload and is a key driver limiting reporting of more minor crashes, but under the current system, it allows more officer time to be spent on other enforcement needs but also creates a data vacuum that puts the City of Los Angeles at a disadvantage relative to other cities with more complete data collection processes. While LAPD had a grant and was working towards implementing an all-electronic system, currently crash and citation records are still maintained on paper. Safety funding sources such as the Highway Safety Improvement Program (HSIP) require direct relationships between crashes prevented and the improvement being funded to be quantified. Without a complete set of crash data, the City of Los Angeles is unable to take full credit for the benefits of a proposed project.

[12] National Security Council, https://www.nsc.org/getmedia/88c97198-b7f3-4acd-a294-6391e3b8b56c/undercounted-is-underinvested.pdf, accessed on 07/07/2023

[13] Bureau of Transportation Statistics, https://www.nsc.org/getmedia/88c97198-b7f3-4acd-a294-6391e3b8b56c/undercounted-is-underinvested.pdf, accessed on 07/07/2023

[14] National Highway Traffic Safety Advisory, Traffic Records Assessment Advisory, 2018 Edition, Report No.DOT-HS-812-601

Limiting crash data collection to fatalities and serious injuries can have the following impacts[15,16,17]:

	Reduced capacity for issuing and tracking citations	Officers need to spend more time at each stop to document citations, and additional resources are needed on the back end to track and log them, introducing more potential for error, which could lead to dismissal of the citation.
	Incomplete understanding of crash patterns	Focusing solely on fatalities and serious injuries provides only a partial picture of road safety issues. By excluding less severe crashes, the available data fail to capture the full extent of risks and problem areas on the road.
	Inadequate assessment of risk factors	By solely analyzing fatal and serious injury crashes, important risk factors associated with nonfatal crashes may be overlooked. These risk factors could include distracted driving, speeding, aggressive behaviors, or infrastructure deficiencies that contribute to a higher likelihood of crashes.
	Lack of proactive and preventive measures	Limiting the focus to severe outcomes, the emphasis shifts more towards reactive measures, rather than prioritizing preventive actions.
	Inaccurate evaluation of interventions	Leads to an incomplete evaluation of the impact of safety measures implemented under the Vision Zero Program.
	Missed opportunities for education and awareness	By limiting data collection to fatalities and serious injuries, opportunities to identify patterns and trends in less severe crashes are missed. These patterns provide valuable insights into specific risk groups, problematic behaviors, or locations that would benefit from targeted education campaigns and outreach efforts.

Since 2021, LAPD is no longer providing injury data to LADOT due to insufficient resources and repercussions from the defund the police movement. The department's data collection and archiving processes are also a challenge in that crash records and other relevant enforcement data cannot easily be extracted and shared with LADOT for safety analysis. This challenge will become more acute as LADOT revises its analysis procedures in search of more proactive safety analysis.

The paradigm shift from having LAPD to having community members report certain crash types through the Community Online Reporting Service (CORS) has been challenging so far. The consensus is that there has been a reduction in incident reports and the overall quality of data provided to the Vision Zero Program has been lowered. There is an opportunity to update data collection processes and storage procedures to better align with Vision Zero Program needs.

HINs are powerful tools to aid in the identification of locations where larger investments are needed, but they also tend to mirror the highest traffic corridors that likely have received the most investment already. HINs often miss less costly opportunities to address safety challenges on lesser traveled streets, or in neighborhoods that are less connected to main travel arteries. Supplemental data sources related to equity, exposure, multimodal traffic volume, and roadway characteristics can reveal safety needs that can be implemented quickly and inexpensively at the systemic level, reducing the number of isolated injuries and fatalities.

A planned hybrid approach that concentrates larger investments focused on specific challenges on HIN roadways and systemic improvements on all roadways can quicken the pace of injury reduction, open the city to more competitive implementation grants, and help the city improve equity in its safety infrastructure.

LADOT has taken some steps to explore big data sources and near-miss technologies to improve safety. These efforts are in the early stages.

[15] National Security Council, https://www.nsc.org/getmedia/88c97198-b7f3-4acd-a294-6391e3b8b56c/undercounted-is-underinvested.pdf, accessed on 07/07/2023

[16] Bureau of Transportation Statistics, https://www.nsc.org/getmedia/88c97198-b7f3-4acd-a294-6391e3b8b56c/undercounted-is-underinvested.pdf, accessed on 07/07/2023

[17] National Highway Traffic Safety Advisory, Traffic Records Assessment Advisory, 2018 Edition, Report No.DOT-HS-812-601

IMPROVEMENT OPPORTUNITY 2.1	Digitize and maintain digital records of crash incidents. This involves converting existing crash records into a digital format and storing them in a centralized database. By doing so, these records become easily accessible and can be efficiently managed, eliminating the need for cumbersome paper-based systems: • Another crucial aspect is the organization of the digital records within the database. It is essential to structure the data in a manner that allows for efficient querying. By organizing the records based on relevant crash attributes such as date, time, location, and vehicle type, authorized users can easily retrieve specific information without requiring significant effort from LAPD staff. This streamlined database querying process enables users to access the data they need promptly and accurately. • To further enhance accessibility and ease of data sharing, the development of a user-friendly portal for authorized users is recommended. This portal would provide direct access to crash records that are not personally identifiable. By utilizing the portal, authorized users can retrieve the necessary information independently, without relying on direct intervention from LAPD staff. This not only saves time and resources but also streamlines the overall data-sharing process, promoting efficient collaboration and information exchange.
IMPROVEMENT OPPORTUNITY 2.2	Analyze crash data to identify specific trends, such as concentrations of young driver-related crashes, unlicensed driver crashes, or senior driver crashes. By recognizing these patterns, the LAPD can develop targeted safety enforcement campaigns and initiatives that address the factors contributing to elevated crash rates. This approach aims to improve safety, preserve independence, and reduce the occurrence of crashes associated with specific risk factors.
IMPROVEMENT OPPORTUNITY 2.3	Crash data collected and stored by LAPD should be supportive of guidelines set by the NHTSA Traffic Records Program Assessment Advisory, 2018 Edition (Report No. DOT HS 812 601).

4 APPLICATION OF TRAFFIC SOLUTIONS

APPLICATION OF TRAFFIC SOLUTIONS

This chapter presents the evaluation the accurate and appropriate application of traffic safety solutions to traffic safety problems in the City of Los Angeles. This is a broad-ranging evaluation that resulted in eight finding areas as follows:

- Program Governance
- Performance and Tracking of Vision Zero Action Plans
- Vision Zero Planning, Budgeting, and Resourcing
- Engineering, Enforcement, Education, and Evaluation
- Integration of Vision Zero with Other City Departments
- City Street Design Guidelines
- Vision Zero Program Progress
- Equity in Project Planning and Implementation.

TOPIC AREA 3: PROGRAM GOVERNANCE

EVALUATION CRITERION: An established program governance is in place, leading to documented processes and clarity in roles for every aspect in the Vision Zero Program.

FINDING 3: There are no program policies, procedures, and governance frameworks to guide program staff and other involved parties on Vision Zero Program planning, implementation, and controls.

One key barrier to progress for the goals of the Vision Zero Program is the absence of clear accountability and well-defined roles and responsibilities among stakeholders. Without a transparent governance framework, managing program expectations and goals can be challenging. This can result in a lack of clarity regarding who is responsible for specific tasks and inefficient allocation of resources.

The Vision Zero Program for Los Angeles was born from a 2015 Mayoral Directive. The Directive established program goals, a Vision Zero Steering Committee and a Task Force, and sets of short- and long-term actions. The Action Plan (2017) and Action Plan + Progress Report (2018) that followed set up equity and engagement strategies, implementation goals, as well actions and strategies. The implementation section of the 2017 Action Plan highlights Engineering, Education, Enforcement, and Evaluation as four key drivers for implementing the program.

However, detailed policies and procedures related to governance of the Vision Zero Program were never established. Over time, this lack of Vision Zero Program governance documentation has led to challenges at multiple levels, such as collaboration, participation, and program implementation.

The one category where multiple guiding documents were developed relates to the engineering component of Vision Zero, as shown in **Table 5** below. These reports are mainly technical and routinely used to plan and implement safety improvement projects.

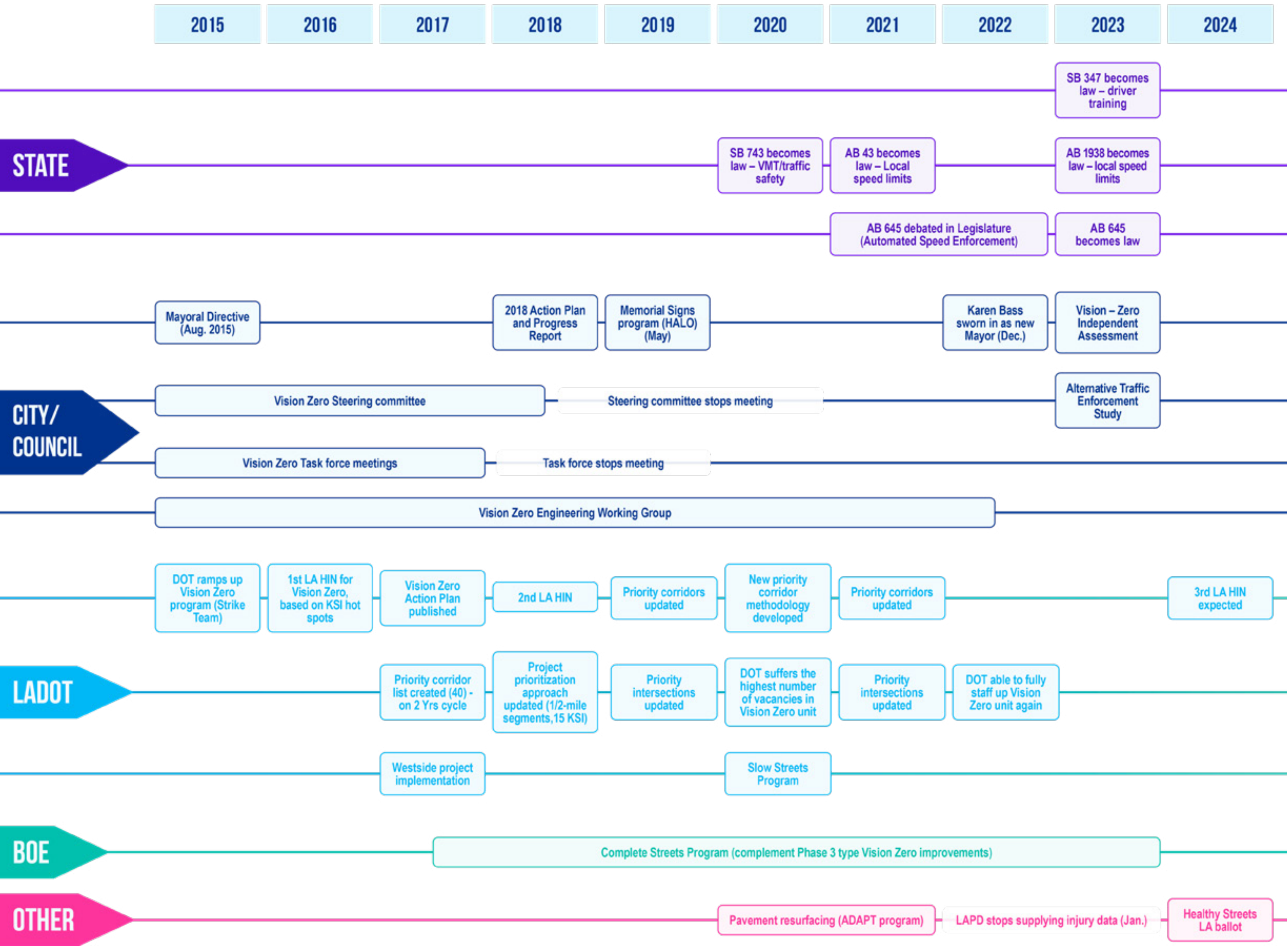
Table 5: Representative Sample, LADOT Guidance Documents

Document Name	Issued	Document Content	LADOT's Purpose of Use
Safety Tool Kit	**September 2019**	This document provides a high-level assessment on cost, time, and effectiveness of each improvement type (low-medium-high and short-medium-long) with expected outcome in percentages (i.e., speed redaction factor and crash reduction factor in percentages). The document also provides a one-page summary on each improvement type's purpose, benefits, and suggested locations.	To prioritize safety improvements and choose their locations
Los Angeles Vision Zero Transportation Assessments	**December 2020**	This corridor report provides a snapshot of existing and estimated future travel conditions along Vision Zero Priority Corridors.	To inform planning and implementation of safety enhancements by providing characteristics of priority corridors
Design Element: Lane Configuration Guidelines	**January 2020**	LADOT Complete Streets Committee issued design guidelines for lane configuration projects.	To inform design of lane configuration projects
The City of Los Angeles Complete Streets Design Guide	**May 2020**	This document is a supplement to the following City of Los Angeles documents: • The City of Los Angeles Complete Streets Design Guide • BOE Street Design Manual and Standard Plans • LADOT Manual on Policies and Procedures.	The BOE and LADOT documents largely do not provide guidance on the safety improvements. This supplement expands upon the content in the Complete Streets Design Guide to provide designers guidance to implement these safety improvements.

Source: LADOT, BOE

One way to infer roles and responsibilities for Vision Zero is to view a histogram of the program since its inception in 2015 (**Figure 5**). In this chart, clearly visible is the City/Council role of leaders and overseers of the program, with LADOT taking the lead role for planning and implementing safety improvements, with support from LAPD, BOE, and others. Most relevant safety-related bills occur at the State level, and these are shown at the top of the graphic.

Figure 5: Los Angeles Vision Zero Key Events



The Mayoral Directive established a Vision Zero Executive Steering Committee and a Vision Zero Task Force. The Executive Steering Committee was chaired by the General Manager of the Department of Transportation (DOT), and co-chaired by the Chief of Police (or his designee). The directive further identified representatives from other Departments and Bureaus, and similarly for the composition of the Task Force. However, no detailed charter or a centralized program management unit was established for Vision Zero. The Steering Committee met from late 2015 through mid-2018, and the Task Force met from late 2015 to late 2017. The only Vision Zero group that has continued to meet to the present has been an engineering-focused Working Group.

As shown in **Table 6** below, the immediate actions for the Executive Steering Committee are assigned to one or multiple lead agency(ies). However, the multiplicity of agencies and lack of policies and procedures detailing which divisions and staff would complete each action, along with other reasons, impacted implementation of the program. Over time, Mayoral oversight of the Vision Zero Program was reduced. Participation of some other departments/bureaus was reduced as well.

Table 6: Executive Steering Committee Immediate Actions

Action Item	Lead Agency	Participating Agency	Target	Status 2023
Define roles and responsibilities of Executive Steering Committee	Mayor's Office, LADOT, LAPD	-	2015	Not completed
Develop framework and accountability measures	Mayor's Office, LADOT, LAPD	Los Angeles County Department of Public Health (LACDPH)	Ongoing	Not completed
Implement communications strategy and progress reporting	Mayor's Office, LADOT, LAPD	LACDPH	Ongoing	• No communications strategy • Progress reports are available for 2017, 2019, 2020, and 2021
Address immediate traffic safety conditions through identifying priority corridors and implementing related safety improvements, education campaigns, and enforcement strategies	LADOT, LAPD, BOE, BSS, Los Angeles Fire Department (LAFD), LACDPH	BSL, BCA, Department of Disability (DOD), Department of Aging (DOA), Department of City Planning (DCP), Department of Neighborhood Empowerment (DONE), Los Angeles Unified School District (LAUSD), Los Angeles School Police Department (LASP), Metro, Los Angeles County Sheriff	2017	Completed
Develop uniform process for interdepartmental data collection and sharing	Mayor's Office	LADOT, LAPD, LACDPH	2017	Not completed
Develop and coordinate long-term funding	Mayor's Office, LADOT, LAPD, LACDPH	Task Force	2017	Not completed

Source: Mayor's Office, KPMG Analysis

PROGRAM MANAGEMENT FRAMEWORK

Planning and implementation of a capital program like Vision Zero requires a significant level of coordination since it's a multi-entity effort. To ensure effective program management and execution that leads to improved program outcomes and increased impact on public safety, there must be a structured approach. The City of Los Angeles did not establish such a framework for the Vision Zero Program, and this resulted in missed program targets.

Additionally, the City of Los Angeles has not established a centralized function or program management unit that would oversee the Vision Zero Program and safety improvements to ensure that they are aligned with the Vision Zero goals and strategies. Such a unit could establish and maintain program management policies, procedures, and governance frameworks to assure that safety improvements are executed consistently across the program. A centralized program management unit could also close the gap in continuous improvement efforts by continually monitoring and evaluating program performance to identify areas for improvement and implement changes to enhance program effectiveness and efficiency. To date, there has been minimal to no efforts in the evaluation component of Vision Zero Program.

Other critical responsibilities of a centralized program management unit are resource management, risk management, reporting and communication, and quality management:

	Resource management	Program resources, such as personnel, funding, and technology are available and allocated appropriately. The outcome of this process would inform the City of Los Angeles' annual budgeting process and clear out existing visibility issues.
RISK	**Risk management**	Program risks and issues that may impact program success are identified, analyzed, and mitigated.
	Reporting and communication	Regular status reports and updates on program performance to internal and external stakeholders. The current reporting is limited to a single annual report to City Council without a standardized structure. Also, the annual report does not include all Vision Zero Program updates per the feedback received from LADOT.
	Quality management	Deliverables and outcomes meet established quality standards and comply with regulatory requirements.

If implemented, a program management framework can provide the following benefits to the Vision Zero Program:

- **Clear goal alignment:** All activities and initiatives within the program are aligned with the Vision Zero goal, actions, and strategies.
- **Role and responsibility clarity:** Defined roles and responsibilities for stakeholders involved in the program, reducing confusion and increasing accountability.
- **Consistent approach:** A consistent approach to managing the program, ensuring that all aspects of the program are executed in a standardized way.
- **Improved decision making:** A framework for decision-making, ensuring that decisions are data-driven and based on defined criteria.
- **Efficient resource utilization:** Resources such as personnel, funding, and technology are utilized efficiently and effectively, reducing waste and driving performance.
- **Greater program visibility:** Greater visibility into program activities and performance, allowing stakeholders to stay informed and make informed decisions.

Some key processes of a program management framework are shown in **Figure 6** below with current status of City of Los Angeles' Vision Zero Program management efforts.

Figure 6: Key Processes of a Program Management Framework with Current Status

○ No systematic approach ◐ Partially demonstrated, but no systematic approach ● Systematic approach

Program Management Framework							
Communication Management	**Schedule Management**	**Issue Management**	**Risk Management**	**Scope Management**	**Budget Management**	**Quality Management**	**Resource Management**
◐	○	○	○	◐	○	○	○
What – illustrative							
Planning, oversight, and realization of information flow through personnel associated with the project	Planning, coordination, and monitoring of the project schedule to achieve timely and proper completion	Effective closure of open decisions and removal of barriers to allow teams to progress	Identification, prioritization, and management of potential risks to project delivery	Setting the boundaries for the project with a well- defined scope	The cost planning and monitoring of the project budget	Performance and deliverable characteristics meet the requirements and expectations	Planning and management of human and physical resources on the project
How – illustrative							
Biweekly meeting cadence: team meetings, project meetings, program management team meetings, and sponsor meetings	Status reporting and monthly status/ dashboard reports detailing the status of the project, including initial task list, status of each task, issues noted, and anticipated completion date	Tracking issue owners, priority, and due dates to avoid project delays	Process includes Risk Log and Risk Management working sessions	Change control process, governing requests for changes to designs, decisions, and scope	Budget tracking, reporting monthly status of cost versus budget and ensuring invoices reference completed work against contractual requirements	Sign-offs of finalized documentation and key deliverables	Managing resourcing proactively, through risk management process and reporting to project sponsors for assistance, as needed

The benchmarking study indicates that most cities choose to establish a Program Management Office (PMO), in most cases reporting to the Mayor's Office (**Figure 7**).

Figure 7: Peer City Program Management Office (PMO) Status

Peer City	Has a PMO?	Reports to:
Washington, D.C.	Yes	Mayor's Office, City Council, Administrative Office, and other City Departments
New York City	Yes	Mayor's Office, City Council, Administrative Office, and other City Departments
Houston	Yes	Mayor's Office, City Council, Administrative Office, and other City Departments
San Francisco	Yes	Mayor's Office, City Council, Administrative Office, and other City Departments
Seattle	Yes	Mayor's Office, City Council, Administrative Office, and other City Departments
San Diego	Yes	Mayor's Office
Boston	No	City Departments
Phoenix	No	Mayor's Office and other City Departments
London	Yes	Mayor's Office and other City Departments
Vancouver	Yes	City Departments

IMPROVEMENT OPPORTUNITY 3.1	Establish a centralized function or unit responsible for planning and delivering the Vision Zero Program utilizing existing program resources. A dedicated program management unit can provide the necessary structure, expertise, and oversight to ensure effective project management, monitor progress, and coordinate efforts across departments and agencies.
IMPROVEMENT OPPORTUNITY 3.2	Under this centralized function, establish program elements such as: • Develop policies and procedures that set up detailed charter of roles/responsibilities for all critical entities (LAPD, LADOT, BSS, BOE, and Mayor's Office) and accountability mechanism for those roles. One example is an overall governance framework documentation structure. Consider the option of injecting Vision Zero Program objectives, goals, actions, and strategies into existing department/ bureau governance if viable. • Define a clear role for the LAPD that includes routine coordination with the Vision Zero team, a system and mandate for data sharing, and corresponding allocation of Vision Zero resources.
IMPROVEMENT OPPORTUNITY 3.3	Re-establish Steering Committee and Task Force structure, with documented clear roles and responsibilities for each, along with appropriate cadence of meetings (e.g., every six months or two months). Provide tools for Vision Zero to benefit from a real capital program and advanced planning for projects. Membership in these bodies needs to recognize the key stakeholders—Mayor's Office, LADOT, LAPD, BOE, and BSS. This centralized function should also develop a decision-making process that facilitates prioritization and collaboration with stakeholder groups.

TOPIC AREA 4: PERFORMANCE AND TRACKING OF VISION ZERO ACTION PLANS

EVALUATION CRITERION: The Vision Zero Action Plan is updated on a regular basis, ideally with grant support. Actions and strategies are tracked and updated in each subsequent version of the Action Plan.

FINDING 4: While some major actions and strategies from the 2017 Vision Zero Action Plan were implemented, many others were not.

The 2017 Vision Zero Action Plan identified the actions under four major categories or goals:

Create Safe Streets for All	Adopt New Policy and Legislation to Strengthen Safety	Respond to Relevant Data	Develop a Culture of Safety
• Pavement preservation • Speed surveys • Temporary street closures • Bicycle network • Traffic signs • Safe Routes to School (SRTS) • Speed mitigation around schools • Capital safety improvements • Street lighting • Street design • City design standards • Signal timing	• Legislation to discourage speeding • Collision reporting • Traffic law compliance • Sustainable funding strategy	• Collision database • Use of data • Consideration for data-driven enforcement strategy	• Vision Zero Los Angeles education campaign • Community partnerships • Community building • Partnering with technology • Partnering with insurance organizations • Education on impaired driving • Partnering with trauma centers • Maximum media saturation for Vision Zero • Partnering with government organizations

Based on review of the Mayoral Directive, Vision Zero Action Plans, LADOT's Annual Status Reports to Council, and stakeholder interviews, the status of Vision Zero Program actions and strategies is summarized in **Table 7** and **8** below.

Table 7: Status of Actions and Strategies

Actions and Strategies/ Topic Area	Number of Actions	Achieved % (by target date)	Achieved % (with delay)	Not Achieved %	In Progress %
Total	**56**	**5%**	**48%**	**46%**	**11%**
1. Create safe streets for all	24	8%	79%	13%	4%
2. Adopt new policy and legislation to strengthen safety	8	13%	0%	88%	50%
3. Respond to relevant data	6	0%	33%	67%	0%
4. Develop a culture of safety	18	0%	33%	67%	6%

Sources: 2017 Vision Zero Action Plan, LA 2018 Action Plan + Progress Report, Annual Reports (FY19-20, 2019, 2020, and 2021), stakeholder interviews, and other documents

Notes:
(1) Actions and strategies with target completion date of 2025 are excluded from the evaluation.
(2) Per our interviews with LADOT, BSS, and BSL, LADWP was not actively involved in the Vision Zero Program implementation as a key partner.
(3) This assessment is reviewed by Vision Zero partnering agencies/bureaus before it's finalized.
(4) When there is no proof of completion for a strategy, the interviews are used as the key source of reference.
(5) The progress or status report is not developed for 2018.

Among a total 56 actions and strategies with 2017 and 2020 target dates, only 5% were achieved on time, 48% were achieved with a one- to three-year delay, and 46% have not been achieved.

In the absence of an Action Plan update, this 2023 independent assessment is the first one that measures progress against the actions and strategies identified in the Action Plans.

Table 8: 2017 Action Plan – Detailed Status of Actions and Strategies

Status: Achieved ✔ Achieved with delay ✔ Not achieved X In progress !

Topic	Actions and Strategies	Target Completion Date	Status	Progress Evaluation	Partners
1. Create SS4A					
Pavement preservation	Digitize annual Street Services work plans to allow for better coordination with the DOT	**2017**	Achieved with delay	Achieved – BSS has digitized its work plans and hosted them on their bureau's website at https://streetsla.lacity.org. This was completed in October 2019.	**BSS, LADOT**
	Inspect and repair 100 crosswalks on the HIN	**2020**	Achieved with delay	Achieved – Completed in August 2023. Per BSS, LADOT is the lead agency on inspection and repair of crosswalks and BSS is responsible for the street resurfacing prior to the repairs of the crosswalks.	**BSS, LADOT**
Speed surveys	Complete 100% of the expired surveys along the priority corridors, 75% of the HIN and 50% citywide	**2017**	Achieved with delay	Achieved – The City Ordinance #185922 went into effect on January 27, 2019, and all sign changes had been made by June 30, 2019, eliminating all expired speed zone surveys.	**LADOT, LAPD**
	Complete 100% of the expired surveys citywide	**2020**	Achieved with delay	Achieved – The City Ordinance #185922 went into effect on January 27, 2019, and all sign changes had been made by June 30, 2019, eliminating all expired speed zone surveys.	**LADOT, LAPD**
Temporary street closures	Provide annual Department of Water and Power work plan to allow for better coordination with other City departments; evaluate temporary sidewalk closure procedures	**2017**	Achieved with delay	Achieved – Development Services Enhancement Partnership Plan was executed in 2018 for the overall coordination of temporary road closures. In 2019, guidelines were prepared for temporary closures associated with sidewalk and curb ramp replacement work.	**LADWP, LADOT**
	Update the Work Area Traffic Control Handbook (WATCH) to strengthen requirements for pedestrian and bicycle detours; update training modules to incorporate changes	**2020**	Achieved	Achieved – 2019 WATCH Manual includes enhanced treatments for detouring bicycles when closing bike lanes, or detouring vehicle traffic into established bike lanes. Per LADOT, the updates were incorporated into the training modules for preparation and review of short-term temporary lane closure plans they provided to City Engineers as well as Industry Designers.	**LADWP, LADOT**

Topic	Actions and Strategies	Target Completion Date	Status	Progress Evaluation	Partners
Bicycle network	Identify bike network gaps during initial project development	**2017**	✔	Achieved – Per BSS, LADOT is the lead agency on identifying bike network gaps. BSS inspected the on-street bikeway network and identified 300 locations for small asphalt repairs, which were completed in July 2017. Per LADOT, bike network gaps were part of initial scoping and development of the initial Vision Zero Projects (the initial 40 priority corridors). The status was "on track" per 2018 Action Plan + Status Update, but the actual completion date is unknown.	**LADOT, BSS**
	Develop a system for pavement inspection/repair of bikeway facilities	**2020**	✔	Achieved – BSS developed a system for pavement inspection and repair of bikeway facilities in July 2021. The program has been developed by BSS Street Maintenance Division (SMD). SMD cross references the bike lane repairs with their resurfacing program and maps all the bike lanes that aren't currently scheduled in the resurfacing program. Then, SMD inspects each location to determine the condition of the bike lanes and to see if the bike lane is an actual dedicated bike lane. Finally, they schedule bike repairs and create a bike lane spreadsheet containing completion dates along with measurements and material use.	**LADOT, BSS**
Traffic signs	Maintain and upgrade speed limit signage	**2017**	✔	Achieved – The City Ordinance #185922 went into effect on January 27, 2019, and all sign changes had been made by June 30, 2019, eliminating all expired speed zone surveys.	**LADOT**
	Upgrade the existing sign maintenance program	**2020**	X	No proof of completion per Annual Status Reports and other information received	**LADOT**
Safe Routes to School (SRTS)	Install 180 high-visibility crosswalks near 50 schools on the HIN	**2017**	✔	Achieved – Per LADOT, HIN Crosswalk upgrades were completed by 2020. They didn't target or track 50 schools specifically, but they mentioned that this action was achieved as part of the effort in 2020. The LADOT also published another action plan called Safe Routes to School Action Plan with the goal of creating SS4A. However, despite the similarities, it is a different action plan with different commitments.	**LADOT**
	Complete 50 Safe Routes to School safety plans	**2020**	✔	Achieved – All 50 plans were completed on June 30, 2022.	**LADOT**

Topic	Actions and Strategies	Target Completion Date	Status	Progress Evaluation	Partners
Speed mitigation around schools	Install 11 school safety zones (15 mph zone within 500 feet of school)	**2017**		Achieved – All 11 pilot locations were completed by 2019.	**LADOT**
	Install 50 school safety zones	**2020**		Achieved – 50 school zones were completed in the first week of August 2023.	**LADOT**
Capital safety improvements	Build 25 concrete pedestrian islands	**2017**		Achieved – BOE is identified as the partner, but BSS led the implementation of concrete pedestrian islands. 25th island was completed on June 5, 2019. BOE designed 45 concrete pedestrian islands over the course of the Vision Zero Program with the first round being completed in 2019.	**BOE, LADOT**
	Prioritize 50 location candidates for capital projects	**2020**	X	The City lacks a uniform prioritization process for capital programs. There was no prioritization of 50 locations, but as part of BOE's Complete Streets Program, four Phase 1 projects have been completed and two Phase 1 projects and one Phase 2 projects are in progress to date.	**BOE, LADOT**
Street lighting	Identify areas for lighting improvements (i.e., bus stops, mid- block crossings, and underpasses)	**2017**		Achieved per Annual Status Reports and other information received	**BSL, LADOT**
	Make lighting improvements on 50% of the HIN	**2020**	X !	No proof of completion per Annual Status Reports and other information received – In progress per Annual Status Reports and other information received	**BSL, LADOT**
Street design	Complete 12 miles of street design plans	**2017**		Achieved per Annual Status Reports and other information received	**LADOT**
	Complete 48 miles of street design plans	**2020**		Achieved per LADOT – As of 2021, 61.26 miles of improvements were designed and installed	**LADOT**
City design standards	Update City design standards using Vision Zero principles	**2017**		Achieved per Annual Status Reports and other information received – completed in 2020	**LADOT, BOE**
	Update curb ramp standards	**2020**		Achieved per Annual Status Reports and other information received	**LADOT, BOE**

Topic	Actions and Strategies	Target Completion Date	Status	Progress Evaluation	Partners
Signal timing	Optimize 400 traffic signals for all road users: pilot signal timing strategy	**2017**	✓	Achieved per Annual Status Reports and other information received	**LADOT**
	Optimize 1,600 traffic signals for all road users	**2020**	✓	Achieved – Per LADOT, this is achieved on July 13, 2023. Currently, 1,566 intersections have LPIs, 7 Pedestrian Exclusives and 33 Pedestrian Hybrid Beacons which gives 1606 locations where signals have been optimized for all roadway users.	**LADOT**
2. Adopt new policy and legislation to strengthen safety					
Legislation to discourage speeding	Consider legislation on automated speed enforcement	**2017**	X !	No clarity on completion per Annual Status Reports and other information received. On June 20, 2023, the City of Los Angeles announced that they support AB 645, which would authorize the City of Los Angeles to implement a speed safety pilot program that includes automated speed enforcement (ASE). Also, LADOT stated that this could be completed as part of City's statewide lobbying efforts	**Mayor, LADOT, LAPD**
	Develop speed-specific report to help legislative strategy and public buy-in.	**2020**	X !	No proof of completion per Annual Status Reports and other information received. LAPD stated that they can only submit legislation annually to be considered by the Office of the Mayor and the Traffic Group has not drafted or was requested to prepare legislation or reports regarding Vision Zero.	**Mayor, LADOT, LAPD**
Collision reporting	Work with the State of California to improve the collision reports for more data on crashes (Form 555)	**2017**	X !	In progress – LAPD stated that they are currently working with Motorola to implement and launch a new Records Management System (RMS). This system will automate crime and crash reports as well as provide electronic citations. LAPD will have the capability of capturing other data points deemed necessary. This system will replace a prior RMS that was discontinued in 2021, which enabled the Department to electronically submit crash reports to the Statewide Integrated Traffic Records System.	**Mayor, LADOT, LAPD**
	Provide training for police officers on updated Form 555	**2020**	X	Not achieved yet – LAPD stated that they have a robust collision investigator school and teaches police officers on documenting traffic crash scenes. The new CHP Form 555 is being incorporated and will be utilized to report crashes. The changes made on the new form are minimal and capture information already documented in the traffic crash narratives. On average, the Department annually conducts four Basic Collision Schools, two Enhanced Collision Schools, two Intermediate Collision Schools and five Collision Investigator Update Schools.	**Mayor, LADOT, LAPD**

Topic	Actions and Strategies	Target Completion Date	Status	Progress Evaluation	Partners
Traffic law compliance	Develop a state legislative strategy that addresses violations that contribute to fatal and severe injury collisions	**2017**	X !	"On track" per 2018 Action Plan, but no proof of completion per Annual Status Reports and other information received – Some legislation passed such as updated AB 390 California Vehicle Code that clarifies pedestrian right of way laws and supports the practice that people driving should yield to people crossing the street. LAPD stated that they cannot propose legislation but can suggest legislation to the Office of the Mayor. At times, the Department has been requested to conduct analysis of proposed legislation. Recently, the LAPD has submitted legislative suggestions to address street racing activity, reduce the number of injuries and improve public safety.	**Mayor, LADOT, LAPD**
	Incorporate Vision Zero education into DMV new driver material	**2020**	X	No proof of completion per Annual Status Reports and per California Driver's Handbook – LAPD stated that they do not propose changes to an independent State agency. The Department was not requested to develop new driver material and has not prepared any such material.	**Mayor, LADOT, LAPD**
Sustainable funding strategy	Pursue Vision Zero mitigation fund for new developments along the HIN	**2017**	X	"Reassessing" per 2018 Action Plan, but no proof of completion per Annual Status Reports and other information received. This action is dropped.	**LADOT**
	Continue to incorporate Vision Zero principles in annual transportation budget	**2020**	✓	Achieved – The extent of Vision Zero integration into funding/budgeting strategy was not assessed. However, the LADOT confirmed that they specify Vision Zero in their budget request every year.	**LADOT**
3. Respond to relevant data					
Collision database	Work with LAPD on a more streamlined hand-off of collision data; incorporate 2014-16 collision data to update the HIN	**2017**	✓	Achieved – Completed in 2018 when the HIN update was made.	**LADOT, LAPD, LACDPH**
	Continue to update the HIN annually	**2020**	X	HIN has not been updated since 2019 – 2020 Annual Status Report states that they will update the HIN and Priority Corridors regularly as new data arrives. Per LADOT, 2023/2024 update to HIN in progress.	**LADOT, LAPD, LACDPH**

Topic	Actions and Strategies	Target Completion Date	Status	Progress Evaluation	Partners
Using data	Publish the top five traffic violations on the GeoHub. Identify areas for education by LAPD's Community Relations Office and Community Traffic Services unit	**2017**	X	"On track" per 2018 Action Plan + Status Update, but no proof of completion per Annual Status Reports and other information received	**LADOT, Mayor**
	Continue to add additional data overlays (e.g., race, ethnicity, income, alcohol outlet density, adjacent land use, crime hotspots)	**2020**	X	No proof of completion per Annual Status Reports and other information received	**LADOT, Mayor**
Consideration for data-driven enforcement strategy	Emphasize traffic enforcement on major moving violations, especially those affecting youth and older adult victims; deploy enforcement and education units to high- risk intersections	**2017**	X	"On track" per 2018 Action Plan + Status Update, but no proof of completion. LAPD stated that they are dedicated to enforcing the California Vehicle Code, especially those laws that are deemed to jeopardize the safety of the community. Traffic officers recognize the importance of ensuring major movers (Speed, Right of Way, DUI, Pedestrians and Traffic Controls) are addressed, and violators are stopped. LAPD recently established a new policy that mandated officers are only allowed to conduct traffic enforcement for those violations that impact public safety. LAPD is prohibited by law to engage in bias policing practices such as targeting the young and elderly community members.	**LAPD, LADOT**
	Prioritize enforcement along HIN on the top collision factors that result in deaths and serious injury collisions	**2020**	✓	Per LADOT, this action was completed prior to the target date in 2020. However, it stopped during the pandemic and is no longer happening. LAPD stated that they continue to emphasize, to all officers, of the importance of traffic enforcement, especially on the HIN. The demands of officers to respond to calls for service takes precedents over traffic enforcement. Ideally, officers would conduct all enforcement along the HIN. However, the HIN is not proportionally distributed throughout the City, especially in Operation -Valley Bureau and traffic enforcement varies per LAPD. Furthermore, traffic enforcement is often predicated on community member complaints and require officers to investigate and conduct enforcement.	**LAPD, LADOT**

Topic	Actions and Strategies	Target Completion Date	Status	Progress Evaluation	Partners
4. Develop a culture of safety					
Vision Zero Los Angeles education campaign	Build a $2 million education campaign to bring awareness and create behavior change around collision factors such as speeding and impaired driving	**2017**	✓	Achieved – accumulation of education related budget items was over $2 million in 2019 per budget Information received from the CAO. They launched a multi-pronged traffic safety education campaign along the HIN using the focus groups and online surveys to develop a message that raised awareness of Vision Zero and called drivers in Los Angeles to action. However, per information received including the team interviews indicate that there are no efforts made about creating behavior change around collision factors. The date of completion is unknown.	**LADOT, Alliance, LACDPH**
	Evaluate and continue education campaign	**2020**	✓	There is $1M/year Education budget in LADOT's Vision Zero budget, but it's unclear how the education budget was spent. There is no actual cost information provided by the LADOT. Per our interviews, education activities are currently very limited to none.	**LADOT, Alliance, LACDPH**
Community partnerships	Complete a $500,000 outreach campaign along Vision Zero priority corridors; continue to conduct meetings with the bicycle community and assist in the City's bicycle plan efforts	**2017**	✓	Achieved – 2020 Annual Status Report states that LADOT continues to help grow and develop the Pedestrian Advisory Committee (PAC) and Bicycle Advisory Committee (BAC) to deepen education and engagement – There is $1M/year Education budget in LADOT's Vision Zero budget, but per our interviews, education activities are currently very limited to none.	**LADOT, Alliance, LACDPH**
	Develop policies, processes, and funding opportunities to support the participation of community leaders and community- based organizations in the development and implementation of Vision Zero	**2020**	X	No proof of completion per Annual Status Reports and other information received	**LADOT, Alliance, LACDPH**
Maximum media saturation for Vision Zero	Leverage existing resources and community leaders (e.g., government leaders, City-owned assets, school-based materials, events)	**2017**	✓	"On track" per 2018 Action Plan – The report stated that seven teams of community organizations carried out eight creative traffic safety campaigns to promote road safety. Also, the teams surveyed nearly 2,000 community members about their traffic safety perceptions before-and-after each campaign.	**LADOT, LACDPH**
	Secure public-private partnerships (e.g., public spokespersons, gas stations, repair shops, auto sales)	**2020**	X	No proof of completion per Annual Status Reports and other information received	**LADOT, LACDPH**

Topic	Actions and Strategies	Target Completion Date	Status	Progress Evaluation	Partners
Partnering with government organizations	Continue school bicycle and pedestrian safety education programs that reinforce the rules of the road and teaches participants how to be more visible when walking, and bicycling	**2017**	✔	Achieved - The Safe Moves Program was operated until Covid-19 hit in 2020.	**LADOT, Mayor**
	Work with driver's education providers to expand learning to "mobility education."	**2020**	X	No proof of completion per Annual Status Reports and other information received	**LADOT, Mayor**
Partnering with insurance organizations	Produce and distribute a "Road Map for Safety" that educates road users about safe ways to behave around key road features; promote use of existing driving behavior data technology	**2017**	X	"On track" per 2018 Action Plan, but no proof of completion per Annual Status Reports and other information received	**LADOT, LACDPH**
	Partner on school-based parent/ youth safety education	**2020**	X	No proof of completion per Annual Status Reports and other information received	**LADOT, LACDPH**
Education on impaired driving	Develop school curriculum about the dangers of distracted driving, driving under the influence, and how to stay safe walking/biking on campus	**2017**	X	"On track" per 2018 Action Plan, but no proof of completion per Annual Status Reports and other information received. Although LAPD was not listed as the partner for this strategy, they stated that they are actively engaged with local schools through programs such as: Street Smarts, Sober Graduation and Bicycle Rodeos. The Community Traffic Services Unit at each LAPD Traffic Division works regularly with their local schools and provides support in their respective areas.	**LADOT, LACDPH**
	Deter impaired driving by targeting education and outreach at alcohol-serving establishments	**2020**	X	No proof of completion per Annual Status Reports and other information received	**LADOT, LACDPH**

Topic	Actions and Strategies	Target Completion Date	Status	Progress Evaluation	Partners
Community building	Identify and use cultural competency training for City staff with the support of community leaders; use cadets to disseminate traffic safety flyers on the High-Injury Network and COMPSTAT-identified areas	**2017**	X	"Reassessing" per 2018 Action Plan + Status Report, but no proof of completion per Annual Status Reports and other information received. LAPD stated that they are unaware of any cultural competency training in relation to the HIN and LAPD Cadets have not been used to disseminate this material.	**LADOT, LAPD, Alliance**
	Develop and implement trust-building opportunities among law enforcement and low-income communities and communities of color, especially prior to deploying any additional traffic enforcement in the areas	**2020**	X	No proof of completion per Annual Status Reports and other information received. LAPD stated that they continue to make strides in developing a robust relationship with the diverse communities in Los Angeles. The focus of these relationships is in traditionally underserved and disenfranchised communities. Currently, LAPD has the following entities dedicated to developing relationships with the communities: Community Safety Partnership, Public Engagement Group, Community Relation Section, Senior Lead Officers, and Community Traffic Safety Units. However, each of the patrol areas and the corresponding traffic divisions also have vigorous trust building programs in place.	**LADOT, LAPD, Alliance**
Partnering with technology	Continue to build relationships with companies such as Waze and Google	**2017**	X	"On track" per 2018 Action Plan + Status Report, but no proof of completion per Annual Status Reports and other information received	**Mayor, LADOT**
	Establish a Vision Zero technology fellowship	**2020**	X	No proof of completion per Annual Status Reports and other information received	**Mayor, LADOT**
Partnering with trauma centers	Work to identify survivors willing to share their stories	**2017**	✓	"On track" per 2018 Action Plan, but they launched two memorial initiatives and partnered with local advocacy organizations/survivor support groups in 2019	**LACDPH, LADOT**
	Create localized safety campaigns that share the personal stories of collision victims in each neighborhood	**2020**	X !	2020 Annual Status Report states that they created a Memorial Sign Program in 2019. Also, LADOT installed two Rainbow Halos and three Memorials	**LACDPH, LADOT**

Sources: 2017 Vision Zero Action Plan, LA 2018 Action Plan + Progress Report, Annual Reports (FY19-20, 2019, 2020, & 2021), stakeholder interviews, and other documents

Notes: (1) Actions and strategies with target completion date of 2025 are excluded from the evaluation.
(2) Per our interviews with LADOT, BSS, and BSL, LADWP was not actively involved in the Vision Zero Program implementation as a key partner.
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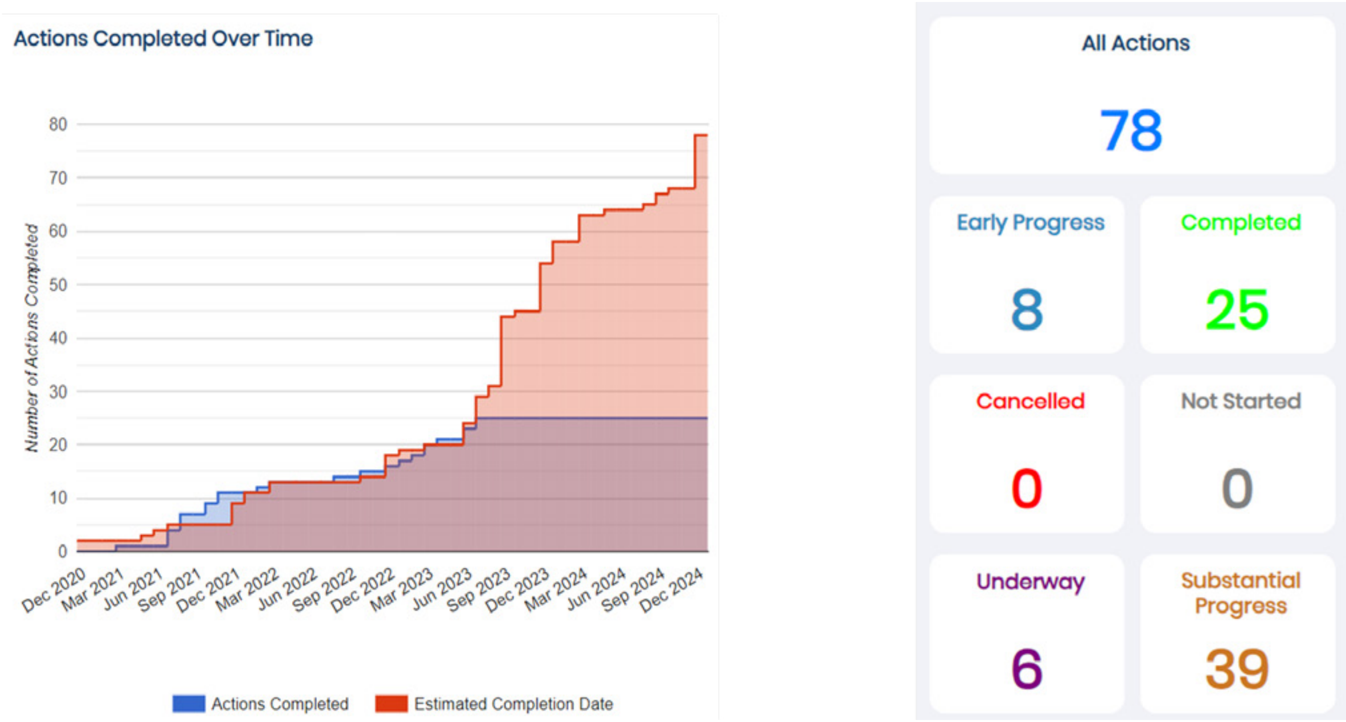
(4) When there is no proof of completion for a strategy, the interviews are used as the key source of reference.
(5) The progress or status report is not developed for 2018.

The above action list includes a well thought out list of initiatives that all contribute to enhancing traffic safety in the City of Los Angeles with many of them having complementary benefits across legislative, data collection and maintenance, enforcement, and the prioritization of infrastructure investments. The infrastructure items under Create Safe Streets for All have advanced the most, largely because those are the items most under the control or influence of LADOT. The least progress has been made on initiatives related to adopting new policy and legislation to strengthen safety. LADOT staff have much more limited influence in this area. While these efforts do take longer, LADOT staff also has less control and influence over these efforts. The City currently does not have a centralized tool to track progress on these initiatives. Generating this table required extensive research and outreach to various City staff and departments. **Figure 8** is an example of Caltrans' safety initiative tracking dashboard that the City could implement to better monitor the progress of specific Vision Zero objectives.

Figure 8: Caltrans SHSP Initiative Tracking Dashboard



Furthermore, the City has other Vision Zero initiatives that are progressing or could add to the effectiveness of this program that have not been added to this list. Some key initiatives include:

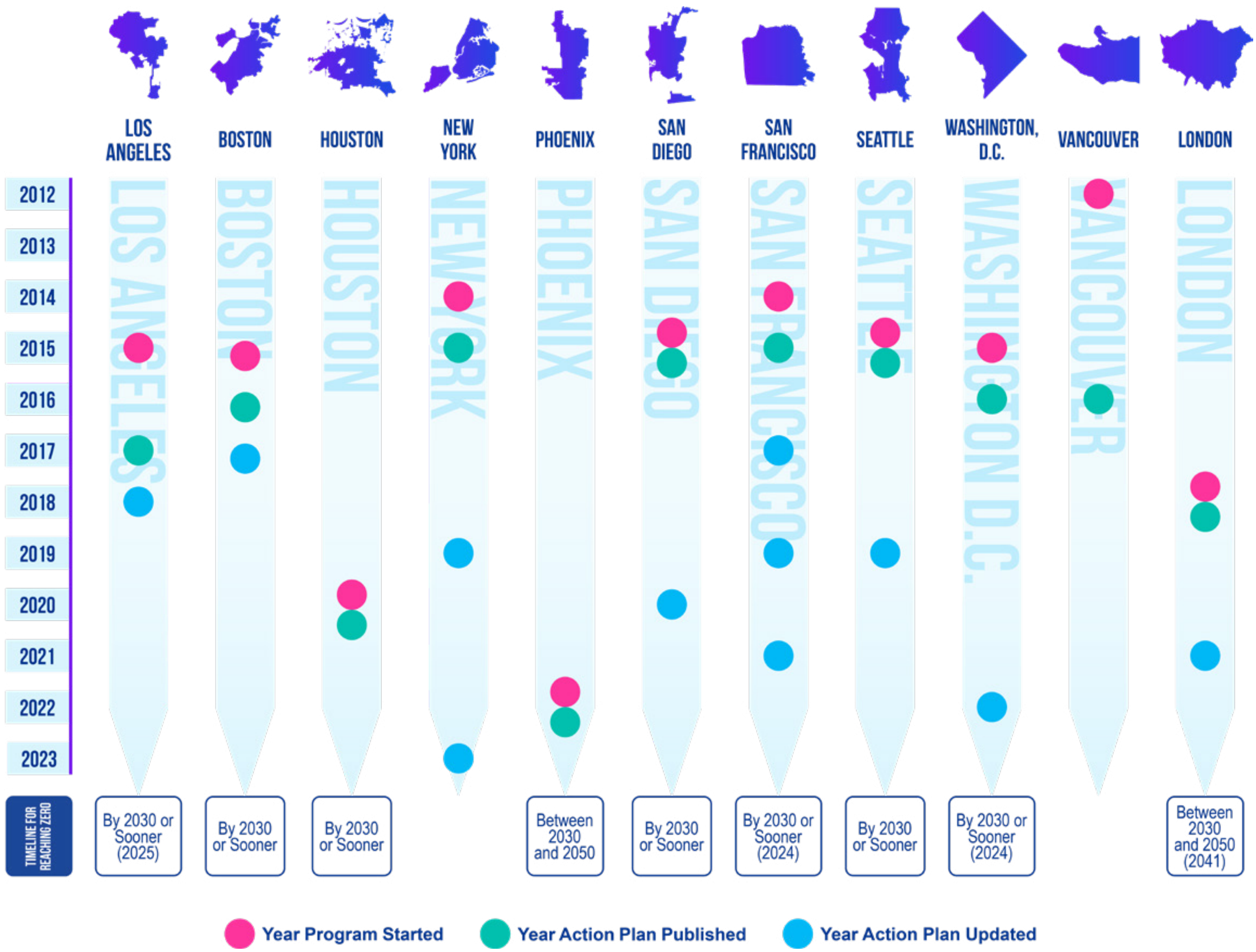
Key **actions and strategies that are not identified** in the Vision Zero Action Plan:

- Collecting and leveraging near miss data to help identify systemic behavior and road user conflicts that could lead to fatal or serious injury crashes.
- Stratifying the HIN to focus on critical needs for specific crash types or roadway users that would help with prioritization of systemic investments.
- Establish a citywide oversight committee to push Vision Zero goals and objectives across all City Departments and Programs.
- Calibrate Safety Performance Functions for the City using before and after data for various roadway and intersection configurations.

Furthermore, the City of Los Angeles has not updated its Vision Zero Action Plan since 2018. The City produced its first Action Plan in January 2017 and followed it up rapidly with the 2018 Action Plan + Progress Report. However, there has not been a comprehensive update since then. In recent years, the Safe Streets for All (SS4A) federal program provides funding earmarked to Action Plan development and updates.

The peer review indicates that while some peers produced their first Action Plan recently (e.g., Houston in 2020, Phoenix in 2022) and therefore have not felt the need to update yet, many of the larger peers have established a cadence of 2–4 years between major updates (e.g., Seattle, San Francisco, San Diego, New York, London). See **Figure 9** below.

Figure 9: Peer Comparison – Action Plan Updates



Assessment of Attainability and Appropriateness of Vision Zero Goals, Short- and Long-Term Actions

The Mayoral Directive states that safety is the number one priority in designing and building the streets and sidewalks in the City of Los Angeles. The Vision Zero Action Plan from January 2017 lists the strategies and actions on how to meet with the two major goals listed in 2015 Mayoral Directive, by stating three benchmarks to measure the success of the program:

These targets are clearer than the two initially listed (i.e., 20% reduction by 2017 and zero traffic deaths by 2025) in 2015 and provide an additional benchmark for 2020. As of 2023, neither of the goals has been attained and there are doubts regarding their appropriateness, as summarized in **Table 9** below.

Table 9: Attainability and Appropriateness of Goals

Directive Goals	Attainability	Appropriateness
Reducing traffic fatalities citywide by 20% by 2017, prioritizing pedestrian fatalities involving older adults and children	Despite hundreds of Vision Zero treatments installed in 2016 and 2017, the first goal of reducing traffic fatalities by 20% by 2017 was not met. LADOT implementation of Vision Zero project began in earnest just in 2017. The 2018 Action Plan and Progress Report documents a 6% decrease (from 2016). No comparison from 2015 to 2017 is provided—it would have shown a 33% increase! —and the 2017 numbers published were provisional. Pedestrian fatalities increased 82% between 2015 and 2017 according to the numbers published. No update to the 2018 Action Plan was produced. Since 2025 is two years away, the goal of zero fatalities by then does not seem attainable.	Appropriateness is a subjective concept. Hardly anyone would disagree with the idea of reducing traffic fatalities. The challenge resides in setting hard goals/ targets, unclear definitions, and the very nature of the problem. Vision Zero as a concept was adopted by many US cities between 2015 and 2020. A growing number of cities have issued Action Plan update reports, in which the goal of reducing traffic fatalities citywide to zero has been pushed out to 2050. In conclusion, while the goals were appropriate from an aspirational perspective, they were not realistic both given the challenge and the short time horizon.
Reducing traffic fatalities citywide to zero by 2025		

Source: Mayor's Directive, KPMG Analysis

There were no subgoals identified in the Mayoral Directive, but rather short- and long-term actions, as well as the creation of a steering committee and a task force. Most of the short-term actions were accomplished. Some were partially completed, and some were dropped as the program progressed. **Table 8** provides a line-by-line assessment of each one. Also, a detailed evaluation of progress on short- and long-term actions can be found in **Tables 10** and **11** below.

Table 10: Mayoral Directive Short-term Actions

Short-term Actions	Assessment (2023)
LADOT to commission an in-depth analysis of the HIN to create detailed crash profiles that identify the type of collision, the types of parties involved in the collision, and the time of day of the collision, and then develop a toolbox of countermeasures that can be applied to each collision profile.	This was completed, with the exception that the countermeasures are not specifically tied to a collision profile.
BOE in collaboration with LADOT and City Planning to adopt the NACTO Urban Street Design Guide and the City's Mobility Plan 2035 for consideration in redesigning intersections and streets enhanced for the safety of all users along the HIN.	This was completed. Complete Streets Design Guide was the result of this short-term action.
LADOT, in collaboration with BOE and BSS, to develop a decision-making process and checklist to ensure safety is the highest consideration for design with a specific focus on the HIN	This has not been completed yet.
BSS to develop a plan to incorporate Vision Zero strategies into major re-striping and crosswalk projects with street resurfacing and slurry sealing project on the HIN	This was partially completed through Bike Lane Acceleration and Safety Team (BLAST) initiative. BSS did incorporate Vision Zero strategies but only for resurfacing/slurry seal projects.
BSL to develop a list of prioritized lighting projects to improve safety on the HIN	This was partially completed but doesn't appear to currently be in progress.
LAPD to develop a plan to expand COMPSTAT pedestrian and bicycle collisions reporting to support the development and implementation of traffic enforcement strategies and training to reduce vehicular speeds and crashes, including hit-and-runs	There was no record of development of a specific plan, but LAPD continues to use data from COMPSTAT as part of their inspections to understand critical issues and to target strategies related to pedestrian and bicycle crashes.
LADOT and LAPD to develop a plan to conduct analysis and to prioritize speed zone surveys to increase speed enforcement for streets on the HIN	This was completed before 2020 and was kept up in terms of the surveys. LADOT was behind on their speed zone surveys but caught up. There is an open question about LAPD enforcement on the HIN, especially with resource allocation challenges.
LADOT and LAPD to develop a plan to enhance traffic calming and improve safety around schools	This is partially complete and progressing. Safe Routes to School Program has been in parallel to Vision Zero. Plans are in place; some work has been completed on the top 50 most unsafe schools (all with grant funds). Next top 50 schools have been identified but plans have not been developed for those yet.
LADOT and LAPD to develop a strategy for developing and implementing a safety campaign with Vision Zero messaging in neighborhoods with high rates of collisions; the Departments pre- and post-studies to evaluate the impact of education campaigns.	This was completed and no longer ongoing. This campaign started in 2017, with a video and billboards.

Short-term Actions	Assessment (2023)
LADOT and LAFD to coordinate to enhance crash site data collection	LADOT approached LAFD to discuss street design for potential conflicts on all DOT projects, but this is not specifically focused on Vision Zero. LAFD reported that LADOT reached out to them for safety statistics early on through 2018 only.
DWP to coordinate with LADOT and other agencies to incorporate safety improvements in infrastructure projects on the HIN	This was not completed.
BCA to develop a strategy to ensure proper implementation of approved DOT traffic, bicycle, and pedestrian control at the Public Works construction sites in the public right of way.	This was completed. BCA's strategy includes educating supervisors, contractors (both started December 2015) and inspectors (started March 2016) on an ongoing basis.
BCA and LADOT to pursue an update of the Work Area Traffic Control Handbook (WATCH) or shall adopt a City-specific supplement to strengthen the requirements for pedestrian and bicycle detours.	This was completed for the 2019 Edition of the WATCH.
In collaboration with the LA Unified School District, LADOT to prepare school safety plans for the Top 50 Safe Routes to School and to conduct outreach and bundle short-term and long-term safety measures that can spur efficiencies in the design of street projects.	This was completed. The plan itself was completed in 2013 (see source) for the top 50 schools. Over the past 10 years focus has been on seeking grants and implementation – in 2023 working on the last schools.
LADOT to re-time at least 400 traffic signals annually to comply with current standards and to address crash patterns, specifically by increasing pedestrian crossing time and minimum green times for people riding bicycles. The Department shall prioritize signal changes where possible along the HIN.	This was completed. The current standards were applied citywide.

Table 11: Mayoral Directive Long-term Actions

Long-term Actions	Assessment (2023)
Work with health and enforcement agencies to integrate health, medical, and enforcement data into a publicly accessible database called TransBase to assist with analysis and decision making. TransBase shall incorporate data from health, medical, transportation and enforcement agencies.	This was not completed.
Develop uniform processes for interdepartmental data collection and publishing to enhance data-driven project identification, prioritization, and evaluation.	This was not completed.
Conduct annual walking and bicycling counts.	LADOT has done these counts biannually, by choosing spot locations. This is used for evaluation of before-and-after projects (e.g., Figueroa Street)
Complete and implement a Pedestrian Safety Action Plan.	This was not completed as intended. Rather, with City Council input, this was folded into an all-mode 2017 Vision Zero Plan where pedestrians were considered one mode like the others.

IMPROVEMENT OPPORTUNITY 4.1	At a high level, the program ought to be reframed on a more realistic basis with a longer timeframe and/or trend goal. The 2015 and 2017 goals were overly ambitious and not attained. Consider the programs of leading peers from the benchmarking survey, such as New York and London. The program goals could also include a metric for potential lives saved and serious injuries prevented based on the countermeasures implemented and their associated crash modification factors.
IMPROVEMENT OPPORTUNITY 4.2	Update the Action Plan for 2024 and reassess program strategy and goals that account for amount of time needed to identify and initiate actions. Key considerations include (but are not limited to): • Successful program governance • Tailoring strategies to target populations (e.g., tiered HINs, pedestrians, cyclists, elderly) • Leveraging technology and accounting for related risks and opportunities (e.g., define a mitigation strategy for the impact of autonomous vehicles e-bikes and scooters) • Leveraging federal and state funding (e.g., SS4A, HSIP, and other grants that can be applied to safety) • Using the Safe System Approach to create and promote a culture of safety while also reducing the impact of human error.
IMPROVEMENT OPPORTUNITY 4.3	The program management team should establish a coalition of leaders across departments (e.g., Task Force) and allocate sufficient resources and develop an annual performance measurement and monitoring plan with targets for how many safety improvements were evaluated and whether investments have been worthwhile from a cost and benefit standpoint, to better inform program planning and future budget requests. They should also establish a risk management plan that addresses what proactive and mitigation strategies can be employed to achieve the Vision Zero goals and objectives.

TOPIC AREA 5: VISION ZERO PROGRAM PLANNING, BUDGETING, AND RESOURCING

EVALUATION CRITERION: The Vision Zero Program employs a systemic planning element that supports budgeting, project development, and a long-term program delivery master plan (10–15 years).

FINDING 5: The Vision Zero Program has delivered many safety treatments to date, but lacks a systemic planning element to support budgeting, project development, and a long-term roadmap to zero traffic deaths.

Vision Zero Project Delivery

The Vision Zero team has identified a series of lower-cost systemic countermeasures that are effective at reducing traffic injuries and fatalities, and has been focused on project delivery, installing those improvements on a prioritized network of roadways identified on the HIN. These projects typically fall within LADOT's ability to manage and control with support from the BOE and BSS where necessary. As of 2021, LADOT has installed:

Leading Pedestrian Intervals (LPIs)
- 813 installations
- National research shows these can lead to a 33% reduction in pedestrian crashes

Pedestrian flashing beacons
- 79 installations
- National research[18] shows these can lead to a 50% reduction in pedestrian crashes

Left turn signals
- 111 installations
- National research shows these can lead to a 71% reduction in broadside (T-bone) crashes

New signals
- 49 installations
- National research shows these can lead to a 36% reduction in Broadside (T-bone) crashes

[18] Federal Highway Administration Crash Modification Factor Clearinghouse: https://www.cmfclearinghouse.org/

The benefits arising from these installations will serve Los Angeles for years to come and all of these projects were made possible thanks to the Vision Zero Program.

LADOT developed a three-phased approach to implement Vision Zero treatments as follows:

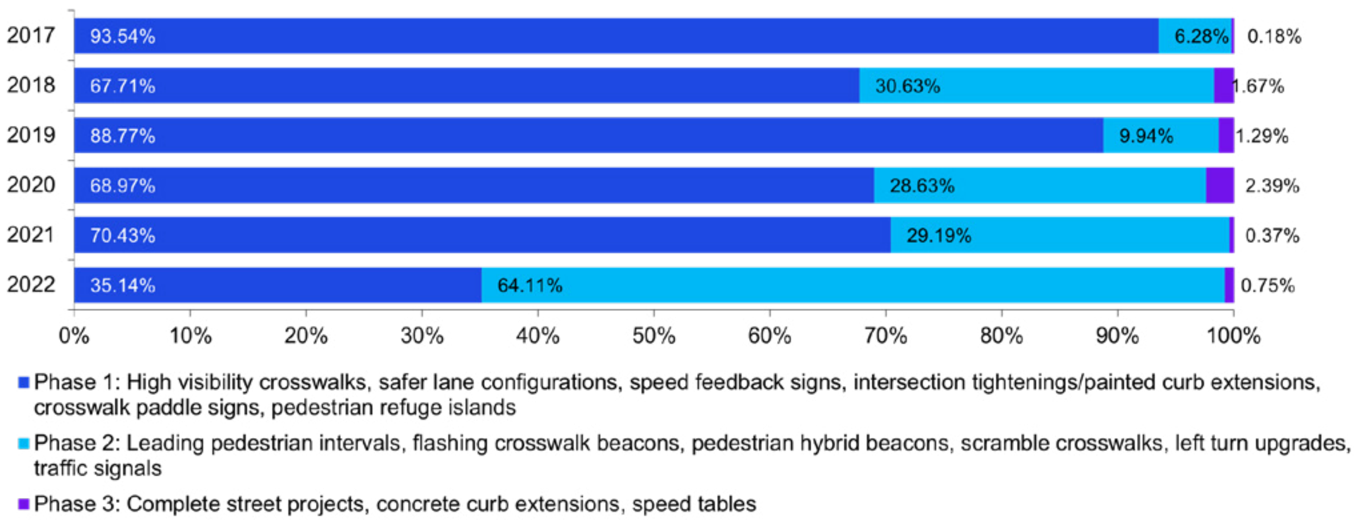
Phase 1 Projects prioritize quick-build temporary interventions that employ materials such as paint, plastic elements, and other temporary means to swiftly redesign roadways. These interventions, which include installing bollards and adding striping, are specifically designed to rapidly improve safety conditions in high-priority areas. However, accurately capturing costs for Phase 1 interventions can present challenges, as they are not consistently tracked on a corridor basis or work order level. Ensuring transparent and accountable financial practices is essential to guarantee the equitable allocation of resources.

Phase 2 Projects focus on updating traffic signals and other infrastructure under LADOT direct control. This phase entails more significant investments and enhancements to the transportation system. By improving traffic signal timing, optimizing signal phasing, and implementing other signal design efforts, LADOT endeavors to enhance safety and efficiency on roadways. Costs associated with Phase 2 projects are generally more structured and trackable.

Phase 3 Projects represent the most substantial and capital-intensive stage of the Vision Zero Program. A Phase 3 project involves collaboration and coordination with various departments beyond LADOT, including agencies responsible for curbs, utilities, or public works. These departments play crucial roles in effecting physical changes to the roadway infrastructure. However, securing funding for Phase 3 projects can pose challenges as they require significant resources and often compete with other capital expenditures. Addressing these financial challenges while maintaining fairness and equity in resource allocation is critical.

Figure 10 below highlights the Vision Zero projects completed since 2017, measured by percentage and by project Phase.

Figure 10: Percent Improvements by Phase (2017–2022)



Source: LADOT

This approach is logical and illustrates LADOT's emphasis of tackling worthy, lower-cost treatments on infrastructure LADOT controls (signals, signage, striping) first. LADOT also leveraged their Safety Toolkit they published in 2019, which ranks 15 different safety treatments (e.g., curb extensions, protected left turns). Each treatment type lists costs (low, medium, high), timeframe (short, medium, long), effectiveness (low, medium, high) and speed reduction factor expressed as a percentage speed reduction expected. In prioritizing projects on that basis, LADOT incorporates a level of cost and benefit into early stages of project planning. This is theoretical and should not be equated with actual cost-benefit evaluation based on in field data.

Systemic Planning Challenges

Systemic planning challenges exist relative to **budgeting**, **project development**, and **long-term planning**.

The Vision Zero Program lacks a systemic planning element to support budgeting. The program rapidly grew from 2015–16 to 2018–19 as funding was ramping up to as illustrated in **Table 12**, below. The program also benefited from Municipal Improvement Corporation of Los Angeles (MICLA) funding, which was originally provided as $15 million in 2019–20 and $15 million in 2020–21 ($30 million total), respectively, to address the City of Los Angeles' traffic safety signal backlog and to support Vision Zero safety projects at identified corridors and intersections. It was subsequently defunded and reapproved in 2021–22 as $30 million.

Table 12: Program Budget by Departments

Year	LADOT	CAO	MICLA (LADOT)	LAPD	BSS	BOE	BSL	BCA	GSD	Total Budget
2015–2016	$647,704									$647,704
2016–2017	$1,982,708				$500,000	$264,286	$315,575			$3,062,569
2017–2018	$22,321,723			$1,500,000	$500,000	$350,513	$1,485,401			$26,157,637
2018–2019	$24,271,819			$1,500,000	$1,487,151	$354,888	$2,027,854	$201,786	$363,668	$30,207,166
2019–2020	$28,754,614		$15,000,000	$1,500,000	$1,790,033	$347,436	$2,042,654	$206,962	$350,897	$49,992,596
2020–2021	$26,367,679		$15,000,000	$1,500,000	$1,594,818	$334,830	$1,474,381	$197,667	$340,792	$46,810,167
2021–2022	$29,767,129			$1,500,000	$1,669,085	$354,985	$1,692,913	$229,196	$375,922	$35,589,230
2022–2023	$32,281,788	$500,000		$1,500,000	$1,781,651	$365,627	$1,474,435	$248,765	$403,929	$38,556,195
2023–2024	$34,821,403			$1,500,000	$1,753,162	$1,868,556	$974,435	$245,438	$402,833	$41,565,827

Source: CAO

To understand the trends in the Vision Zero budget year over year, the following four appropriation units or budget accounts were selected for assessment:

- Vision Zero Education and Outreach
- Vision Zero Traffic Signals
- Vision Zero Corridor Projects (M and SB1)
- Vision Zero Bus Stop Security Lighting.

Table 13: Historical Program Budget and Expenditures

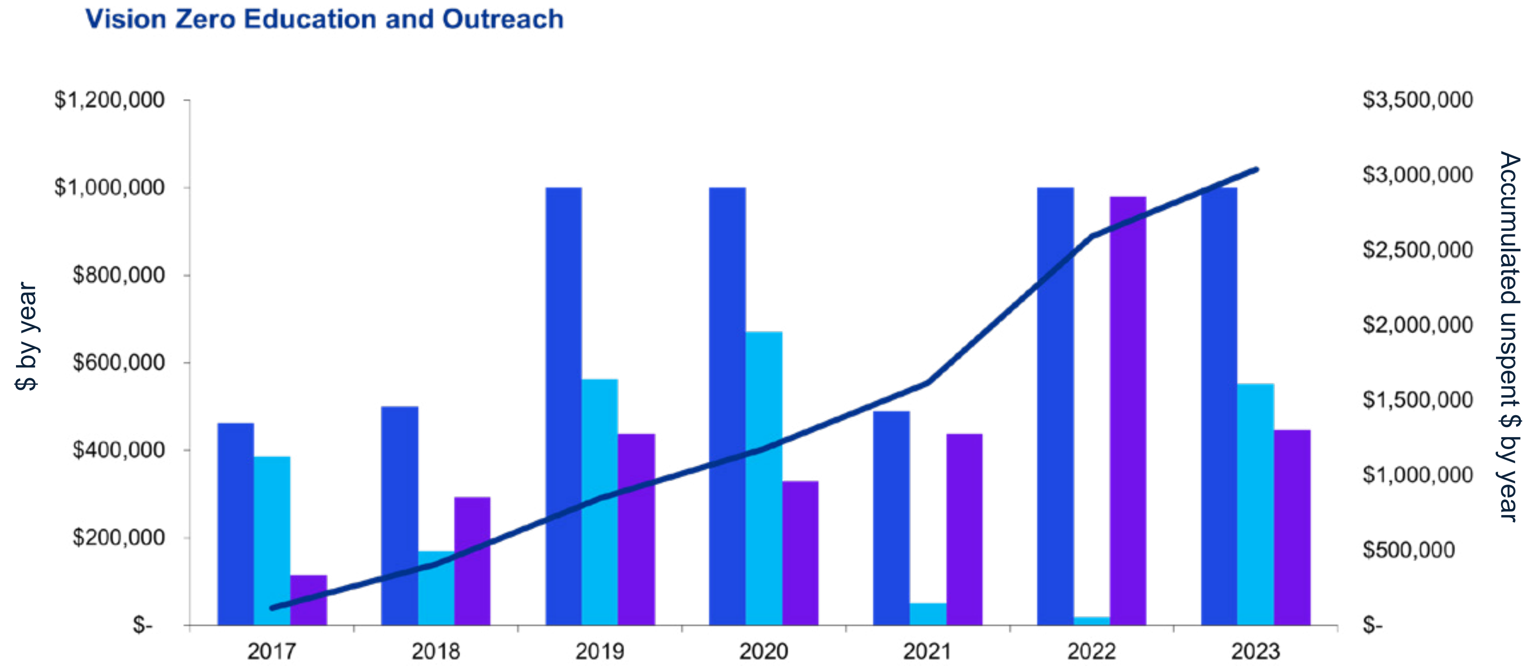
Appropriation Bucket	FY	Budget	Spent	Unspent
Vision Zero Bus Stop Security Lighting	2018	495,000	489,785	5,215
	2019	365,000	150,882	214,118
	2020	495,000	263,794	231,206
	2021	495,000	-	495,000
	2022	495,000	161,875	333,125
	2023	495,000	-	495,000
	Total:	**2,840,000**	**1,066,036**	**1,773,664**
Vision Zero Education and Outreach	2017	462,340	462,340	-
	2018	500,000	500,000	-
	2019	1,000,000	889,467	110,533
	2020	1,000,000	536,032	463,968
	2021	488,427	21,887	466,540
	2022	1,000,000	-	1,000,000
	2023	1,000,000	-	1,000,000
	Total:	**5,450,767**	**2,409,726**	**3,041,041**
Vision Zero Traffic Signals	2018	4,339,555	3,080,463	1,259,092
	2019	4,000,000	3,333,334	666,666
	2020	9,250,000	6,684,724	2,565,276
	2021	11,313,185	129,843	11,183,342
	2022	6,771,511	-	6,771,511
	2023	6,771,511	-	6,771,511
	Total:	**42,445,762**	**13,228,364**	**29,217,398**
Vision Zero Corridor Projects (M and SB1)	2018	1,984,060	1,511,366	472,694
	2019	4,483,563	4,483,433	130
	2020	7,559,138	6,649,995	909,143
	2021	13,604,789	4,447,926	9,156,863
	2022	18,156,125	-	18,156,125
	2023	19,525,545	494,343	19,031,202
	Total:	**65,313,220**	**17,587,063**	**47,726,157**

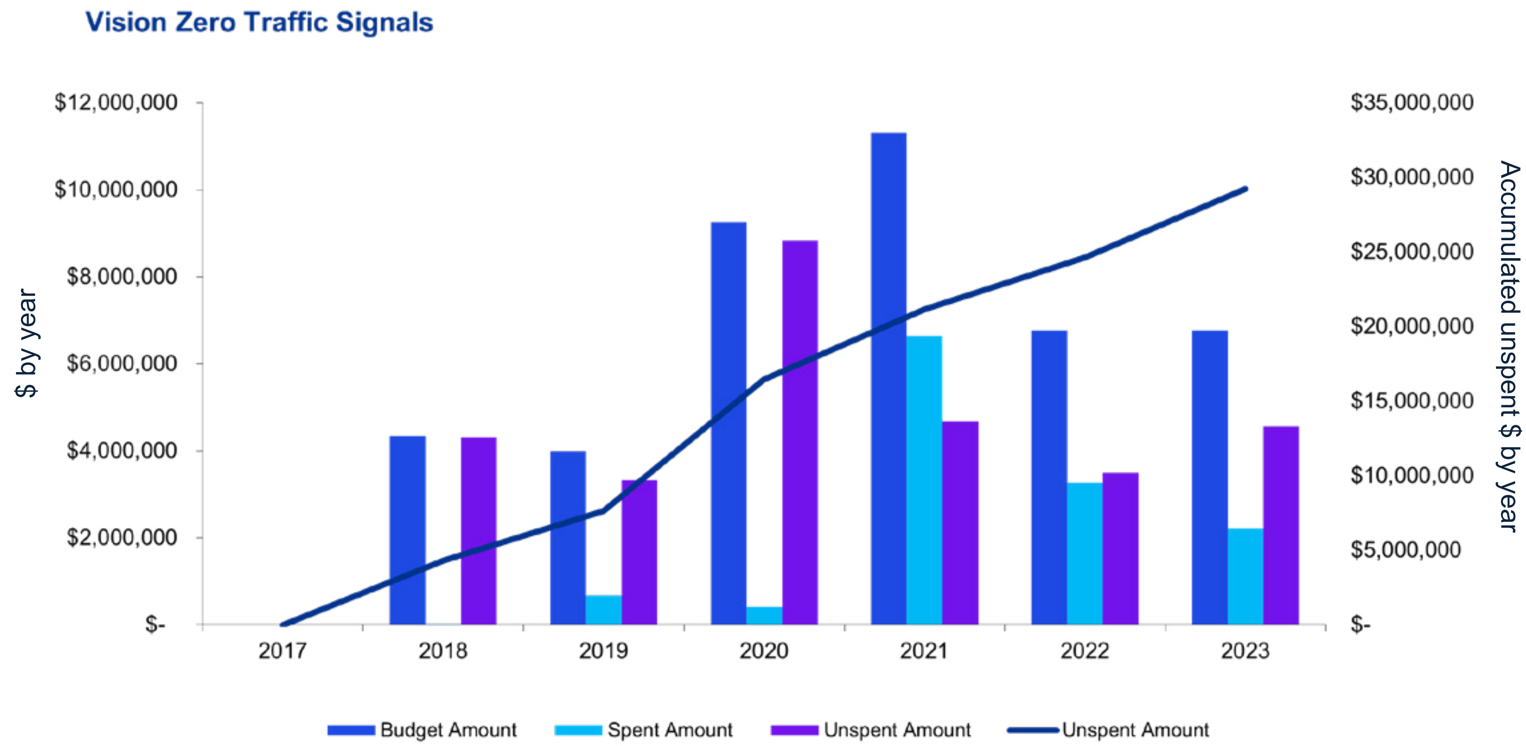
Source: CAO

Notes: (1) Spent amounts are the total expenditures accumulated since budget inception year.
(2) Unspent amounts are the combination of uncommitted and encumbered amounts.
(3) All amounts are in US dollars.

As shown in **Figure 11**, there is a consistent **underspending in all the budget accounts ranging from 27% to 44%**. This range is even higher for **unspent amounts ranging from 56% to 73%**.

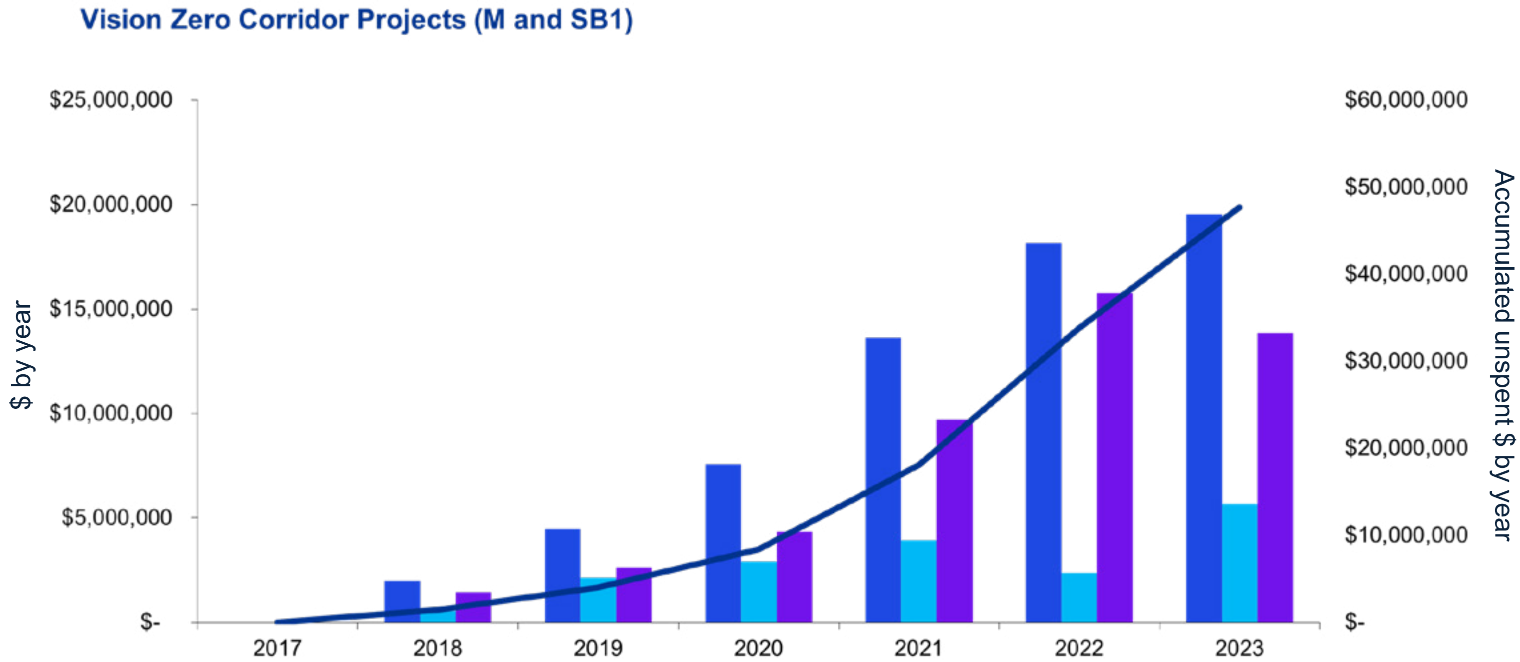
Figure 11: Historical Program Budget and Expenditures

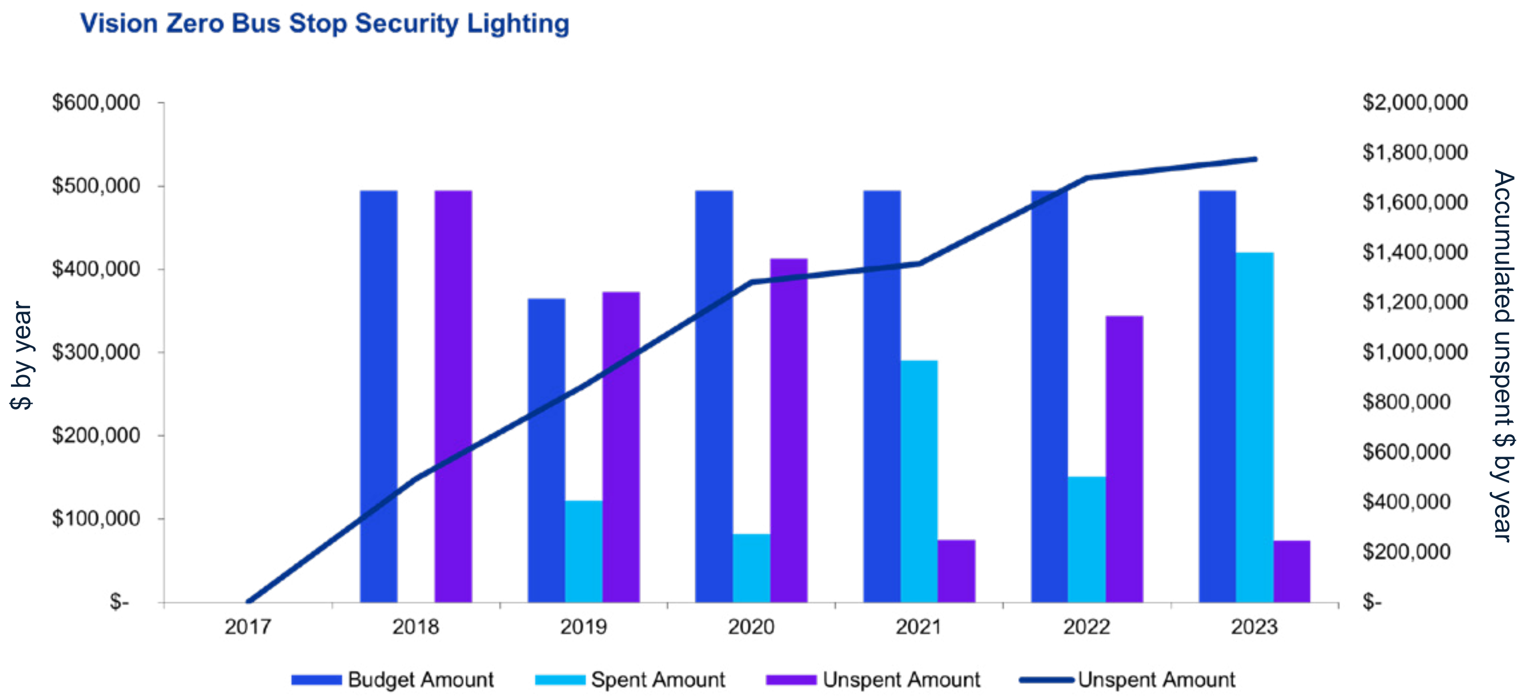




Source: CAO

Figure 11: Historical Program Budget and Expenditures (continued)



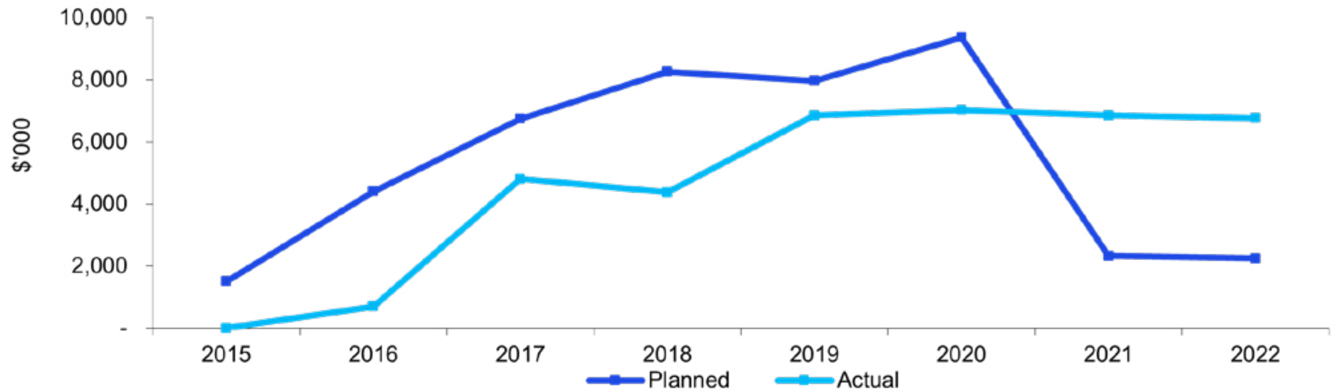


Source: CAO

The Vision Zero Program budget against expenditures was not monitored and controlled. This limits the assessment of additional funding needs for different parts of the scope, which is necessary to achieve the Vision Zero goals.

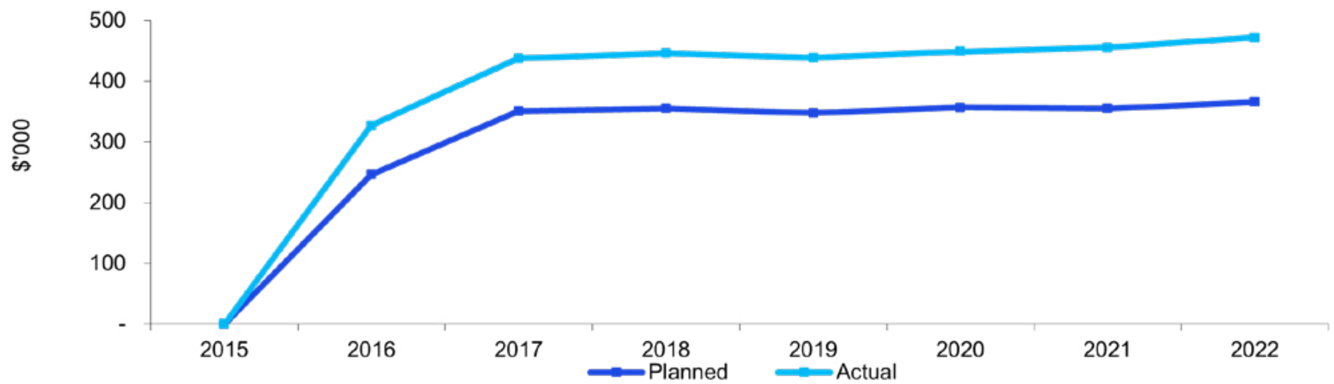
Figures 12, 13, and **14** demonstrate the historical level of Vision Zero Program labor costs for LADOT, BOE, and BSS. Since the total project costs (direct and indirect) are not tracked, these charts include only the labor cost.

Figure 12: LADOT Planned vs. Actual Labor Cost



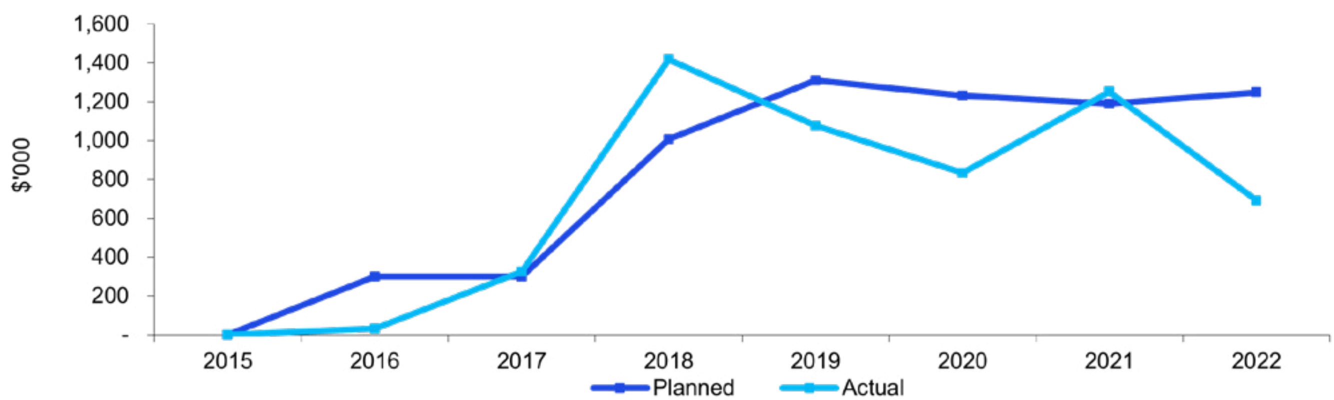
Source: LADOT

Figure 13: BOE Planned vs. Actual Labor Cost



Source: BOE

Figure 14: BSS Planned vs. Actual Labor Cost

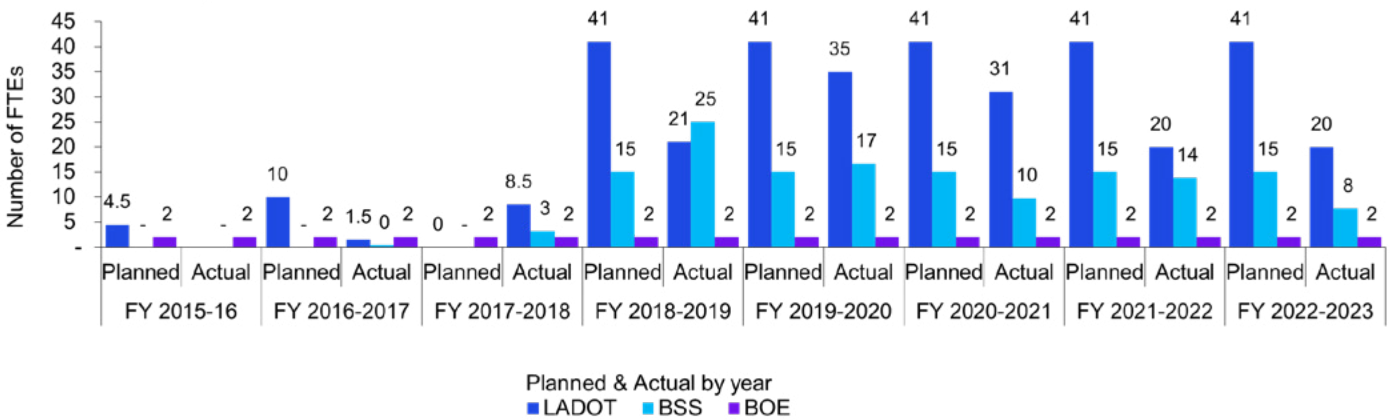


Source: BSS

The program budget, prepared by LADOT with some support from BOE, lacks detailed estimates and assumptions. As a citywide program, Vision Zero suffers from a lack of multidepartment budget planning, as well as issues related to multiyear budgeting. Funding requests need to document the latest grants assumptions in addition to detailed justification. Budget planning is a legitimate activity that needs to be both planned and funded. The balance of funding between Phase 1, Phase 2, and Phase 3 projects does not seem to be consistent year over year and does not seem to be part of the overall budget request process.

Project development is directly impacted by staffing. Recruiting, retention, and full staffing is a citywide challenge not limited to the Vision Zero Program. The City of Los Angeles instituted a hiring freeze from March 2020 to June 30 2021. LADOT and BSS have struggled to fully staff their Vision Zero units, as can be seen in the staffing chart in **Figure 15** below, with vacancies reaching up to 50%. BOE has been more stable, albeit operating at a much lower staffing level. While the broader hiring freeze and staffing challenges may have contributed to LADOT and BSS filling Vision Zero positions, steps could have been taken to protect and prioritize such a high priority program.

Figure 15: Vision Zero Program Full-time Equivalent (FTE) Employees



Source: LADOT, BOE, and BSS

The project development process to date has been based on the HIN and priority corridor network that was developed and most recently updated in 2020. This has been effective way to prioritize systemic improvements such as the LPIs, beacons, and signal improvements, but does not lead to as much progress on larger initiatives that develop a full Vision Zero concept for the City of Los Angeles' major corridors and neighborhoods. Large-scale projects that would significantly change the layout of a street or the available capacity for vehicles are not incorporated into the day-to-day operations of the Vision Zero Program and are handled on a case-by-case basis as grants and other opportunities are presented. Project identification and planning often occur just a few months before the expected construction start date, resulting in inefficiencies and underutilization of available resources. By improving project identification and planning processes, LADOT can optimize resource allocation and ensure the effective implementation of projects.

The Vision Zero Program lacks funding for planning stages, especially for Phase 3 type improvement projects, which poses challenges to the long-term strategy and planning. Additionally, there is no systematic approach to assigning budgets to specific city departments and Vision Zero projects. This results in a disconnect between Vision Zero actions and funding strategies, ultimately impeding the achievement of the Vision Zero goal. The program budget, prepared by LADOT with some support from BOE, lacks detailed estimates and assumptions. It is important to enhance funding availability in the early stages of safety improvement projects and establish a systematic approach to assign budgets.

Long-term capital program planning is critical to enable the city departments to strategically allocate and manage their resources required for the Vision Zero Program. Without a cohesive long-term capital program planning process, resources, including funding and personnel, may be allocated inefficiently, resulting in wasteful spending and diminished program outcomes. The Vision Zero Program did not have a long-term planning approach and the improvements did not go beyond restriping in most cases for this reason. Additionally, due to the absence of a long-term plan, the agencies/bureaus were not successful securing the funds that they needed to achieve the Vision Zero goals.

Furthermore, without a design or planning in early stages, decision-making around a capital project may become reactive, rather than proactive. This can lead to a lack of strategic alignment between a capital projects and other objectives. For example, some communities and City Council members did not initially support the Vision Zero Phase 1 level improvements in their council district, but their approach had changed when a transformative Phase 3 (beyond striping, includes widening and other improvements) Vision Zero corridor was proposed. Therefore, the Vision Zero Program planning team must consider all different solutions when planning the projects to get more community engagement and support. The team indicated that when more time and effort was spent to project planning to demonstrate the need effectively, the requested amount of funds were secured successfully.

IMPROVEMENT OPPORTUNITY 5.1	Develop a comprehensive master plan that balances short-term actions with a 5-, 10-, or 15-year look- ahead design and construction plans based on proactive project identification and realistic funding estimates. To enhance the implementation process, LADOT could take a more proactive approach by identifying projects earlier and establishing realistic timelines.
IMPROVEMENT OPPORTUNITY 5.2	Budget process should be informed by the program progress and future planning. Tracking of existing expenditures and cost per project for each phase can be aligned with available staff and equipment resources to help budget for what can be accomplished each year. The program should include financial practices that are transparent and accountable to promote fair resource allocation. The structured and trackable costs of Phase 2 projects are a good template for financial management and evaluation.
IMPROVEMENT OPPORTUNITY 5.3	Develop specific individual plans for all the arterial corridors within the HIN, considering all critical aspects of safety improvement. Explore how BOE could potentially support or lead aspects of this. Verify existing conditions before the design phase to ensure accurate information and successful project execution.
IMPROVEMENT OPPORTUNITY 5.4	Consider using private contractors to advance safety improvement projects. This can provide many benefits, including specialized expertise, enhanced efficiency, greater accountability, flexibility, and reduced liability. Equally important, this is a good option in times of understaffing, which has affected the Los Angeles Vision Zero Program in prior years.

TOPIC AREA 6: ENGINEERING, ENFORCEMENT, EDUCATION, AND EVALUATION

EVALUATION CRITERION: The Vision Zero Program employs a balanced approach with respect to Engineering, Enforcement, Education, and Evaluation, consistent with the 2017 Vision Zero Action Plan.

FINDING 6: The 2017 Vision Zero Action Plan outlined four components to reach the Vision Zero goal: engineering (innovative street design), education, enforcement, and evaluation. However, the program has become overly engineering-focused with very-limited-to-no education, enforcement, or evaluation activities.

The FHWA has adopted the Safe System Approach based on the principles that:

- Death/serious injury is unacceptable
- Humans make mistakes
- Humans are vulnerable
- Responsibility is shared
- Safety is proactive
- Redundancy is crucial.

Source: Federal Highway Administration

The approach relies on five tools to achieve the goal of zero deaths. These are Safer People, Safer Vehicles, Safer Speeds, Safer Roads, and Post-Crash Care. The approach updates FHWA's traditional approach to traffic safety by:

- Avoiding serious injury and death rather than trying to eliminate all crashes
- Accepting that people make errors rather than relying on correcting all behavior
- Reducing the impact of crashes rather than an exclusive focus on speed control
- Accepting responsibility as a road owner/operator rather than focusing on individuals
- Proactively addressing risks in the system rather than responding to crash history.

These principles and approaches highlight that engineering work is needed in concert with educational, enforcement, and emergency response functions to make the transportation system more resilient and forgiving of human mistakes. They also remind us that individuals have responsibility and that we should use the tools available to reduce the kinetic energy associated with crashes by reducing speed and the potential for conflict between vehicles moving in different directions.

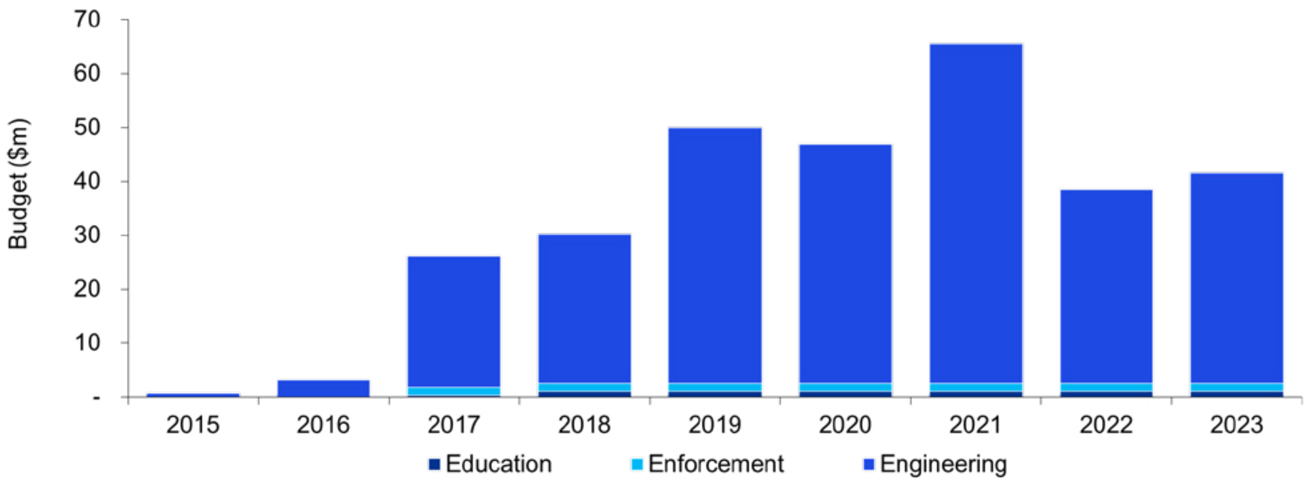
Engineering Focus

While it was not envisioned to be this way at the beginning, Los Angeles' Vision Zero has become almost exclusively an “engineering” program, with some community outreach to support implementation of the safety treatments, and some ad-hoc enforcement. During FY 2022–23 no less than 94% of the Vision Zero Program budget was set aside for engineering activities (**Figure 16**). This percentage includes investing in community engagement strategies to facilitate implementation of Vision Zero projects.

The nature of the program is fundamentally different from other large cities with more successful safety outcomes, such as New York City, London, or Chicago. Each of these cities devotes a much larger share of their Vision Zero Programs towards education, enforcement, as well as program evaluation.

The three-phased approach outlined in **Topic Area 6** exemplifies the program focus—engineering, or “innovative street design” as outlined in the 2017 Action Plan. Perhaps one of the reasons that the Vision Zero Program has become so singularly focused on engineering solutions is how the program is run. The Vision Zero Steering Committee and Task Force disbanded in mid-2018 and late 2017, respectively. The only cross-agency group that has continued to function is a Working Group focused on advancing engineering street safety projects.

Figure 16: Budget Allocation Over the Years



Source: CAO

Community Engagement

LADOT stood up its community engagement strategy and team in 2019–2020 to focus on the 2019 Priority Locations and five 2017 Priority Corridors (Adams Boulevard, Central Avenue, Fletcher Drive, North Figueroa Street and Sepulveda Boulevard). Prior to this time, very little community outreach/public education occurred, and LADOT relied mainly on consultants when this type of work was needed for safety projects.

With the Vision Zero Program growing, LADOT lobbied for and received funding for three positions—two public engagement/education specialists and one graphic designer. By comparison, this represents about one third of LA Metro's public outreach team.

The thrust of the engagement is to work with the communities where Vision Zero projects are planned to ensure members of the community are aware of the project's safety benefits and trade-offs. In 2021, LADOT further evolved the model and labeled it a Dignity-Infused Community Engagement model. This includes working with community-based organizations, youth canvassing, and engaging local businesses. Tools include social media outreach, community-based events, and mobile storytelling. It also includes translation/interpretation, coordination for transportation/childcare, and being sensitive to accessibility needs.

In addition, the LADOT Vision Zero website launched in 2019 provided a key online hub for information sharing and comment feedback mechanism. The graphic designer for Vision Zero produces fact sheets, flyers, project boards, photo simulations of planner improvements, infographics, and the like. The 2019 Vision Zero website is now part of the larger LADOT Livable Streets website, which contains Vision Zero as well as related programs such as Safe Routes to Schools. The separate section on Vision Zero is focused on projects and displays the program toolkit.

The combined community engagement level of effort is made up of three staff since 2022 spending about 25% of their time on Vision Zero (0.75 FTE) plus consultant support (approximately $200,000 per year supporting Vision Zero).

Stakeholder interviewees commented that:

- LADOT is recognized as the lead entity on what are often tough community conversations regarding Vision Zero safety improvements.
- Community outreach program for Vision Zero is considered strong (in contrast to 2010 Bicycle Plan, for example).
- LADOT has learned a lot from its earlier community engagement efforts (initial West Side approach and result—although this one has a political pushback dimension to it as well, as compared to Adams Boulevard, which was considered a major Vision Zero breakthrough).

Community outreach examples include:

- Community outreach for lane reconfiguration, median widening project on three miles of Sepulveda Boulevard between Nordhoff and Rinaldi, during 2019 and 2020
- Community outreach for lane reconfiguration project on 1.6 miles of Adams Boulevard between Hauser and Crenshaw, October 2020 to January 2021
- Community engagement surveys for Western Avenue and Anaheim Street project in Wilmington (2022).

Public Education

Public education is something that LADOT has historically not taken a leading role on. LADOT has conducted billboard campaigns and created videos, with general messaging to slow down and that speed kills. One billboard example run in 2017 said, "At 40 mph on Pico, even a good driver's car is deadly—Check your speed to keep kids alive." Another well-publicized example was Los Angeles Rams Punter Johnny Hekker's role as Vision Zero ambassador in 2017–18. One challenge with public education is that it's extremely difficult to establish a clear nexus with the campaign and safety improvements, i.e., quantifying the safety benefits. Some politicians have concluded these campaigns did not work ("nothing we can say really worked"). Public education campaigns are expensive, and it can be difficult to measure their level of success, leading them to fall out of favor if tangible results are not seen in the short term.

Several safety programs have major public education components, such as Safe Route to Schools, but no significant public education campaign branded as Vision Zero has been conducted since the 2017–18 timeframe.

Enforcement

LAPD's traditional role is to enforce current laws throughout the City of Los Angeles, including on the city's roads. The number of employed sworn officers at LAPD shrunk compared to 2020 levels with roughly 9,000 officers (a loss of about 900 officers). LAPD has also been impacted by the broader "Defund the Police" protests occurring on the national stage since 2020. LAPD needed to make its own decisions regarding staffing allocations among competing priorities and this was a focus on responding to 911 calls post-pandemic.

Vision Zero enforcement is intended to be supported at a level of $1.5 million per year, in addition to regular officer duties. LAPD focuses on speed enforcement, bicycle and pedestrian details, and occasionally conducting driving under the influence (DUI) patrols where they will flood an area with officers.

LAPD reduced its role in traffic enforcement as discussed in **Topic Area 13**. Citations and DUI arrests in 2020 were roughly half the level they had been when the Vision Zero Program was initiated four to five years earlier.

Evaluation

Besides the annual reports to City Council, there is very little ongoing evaluation of the Vision Zero Program. LADOT conducts limited before-and-after assessments of completed projects, but staff resources and available budget limit the capacity to complete them. It was reported that some evaluation efforts occurred early in the program for total fatalities/ KSIs, but the results were not favorable.

Conducting Vision Zero project evaluations in the field can be challenging. Some can require over a year to be able to measure the impact of a safety improvement, by which time focus has shifted to other more current projects. Additional detail and evaluation improvement opportunities are identified in **Topic Areas 4** and **9**.

To address these challenges, LADOT engaged a consultant in late 2022 to evaluate the Vision Zero Program at a systemwide and installation-specific level. The typologies are expected to include a sampling of individual corridors, intersection treatments/other pedestrian crossing facilities, and a roadway with a bicycle facility installation.

In conclusion, the Los Angeles Vision Zero Program was intended to follow a Safe Systems approach. Implementing the program, as illustrated in the 2017 Action Plan, was intended to rely on Engineering, Education, Enforcement, and Evaluation as major drivers. The vast size of the City of Los Angeles presents a formidable challenge to achieve zero fatalities. Peer experience supports a Vision Zero Program that is not limited to a major engineering or innovative street design program. No other peers spent over 80% of their Vision Zero Program resources on Engineering alone. It is important to have enforcement, education, and evaluation efforts as well, while keeping in mind the Safe System's approach, which puts more emphasis on safer people, safer vehicles, safer speeds, safer roads, and post-crash care.

IMPROVEMENT OPPORTUNITY 6.1	Create safety emphasis areas that identify the behaviors, roadway characteristics, and travel patterns most associated with fatal and serious injury crashes, and use it to align education, enforcement, and engineering activities to prioritize reducing the risk of death or injury.
IMPROVEMENT OPPORTUNITY 6.2	Develop an education and awareness campaign that is partnered with targeted enforcement activity that creates a citywide brand for Vision Zero. Peer cities such as New York have had success in increasing project/treatment acceptance and combatting behavioral issues. For the campaign to be effective, social media should be harnessed for both community engagement and education campaigns through the purchase of ads and other strategies as a cost-effective way to reach the broader public and to keep momentum on community engagement activities.

TOPIC AREA 7: INTEGRATION OF VISION ZERO WITH OTHER CITY DEPARTMENTS

EVALUATION CRITERION: There are multiple successful city governance models for Vision Zero. One unifying thread is a commitment, at the highest levels, on the vision and priorities for implementation.

FINDING 7: Vision Zero has not been embedded in other department mandates, including those led by other city departments/bureaus (e.g., BSS and BOE), creating an ad-hoc approach to implementation of safety improvements.

Coordinating the design and construction of larger and more impactful Vision Zero projects is difficult for LADOT to manage on its own given its purview, which is focused on signs, striping, and signals.

In the context of LADOT's Vision Zero Program, there are several challenges and opportunities related to the coordination and integration of efforts with other organizations, such as Planning, BSS, BOE, and LA Metro, as well as the implementation of the Complete Streets Program. The Complete Streets Program, led by BOE, incorporates Vision Zero improvements. These challenges and opportunities can impact the effectiveness and efficiency of the Vision Zero initiatives. For example, the absence of comprehensive master planning for major corridors limits the extent of safety improvements.

Challenges arise in the Vision Zero Program, as other programs lack a sense of ownership and integration, hindering collaboration and coordination for safety improvements. Stakeholder interviewees stated that the Reseda Complete Streets project and the implementation of floating islands have not received support from LA Metro. Lack of support from other programs potentially impedes the implementation of safety measures.

Most Vision Zero projects, particularly those in Phases 2 and 3, require collaboration between LADOT, BOE, and BSS. LADOT as the program lead must therefore request resources from the other departments to support Vision Zero goals. BOE and BSS, however, have a suite of competing projects and requests from other city initiatives that they must balance. Without a clear mandate for each department, Vision Zero is one of many important programs rather than a unifying principle across all city activities.

It is important to underscore the importance of the collaboration between LADOT, BOE, and BSS for successful Vision Zero Program delivery. To understand and document the coordination occurring among these departments/ bureaus, a workshop was conducted with all three entities. Key findings are summarized as follows:

1. The program uses two primary delivery methods (in all cases, LADOT drives the Vision Zero project list):

Traditional Vision Zero project delivery	Modified Vision Zero project delivery
LADOT develops the scope with BOE cost estimate support, then turns project over to BOE for design and contract delivery. This is the primary delivery method, typically used for smaller projects. The scope of work drives which model delivery method is used (e.g., signal/ signage/striping heavy versus concrete/civil heavy).	BSS develops the scope with LADOT input and keeps the project in-house for design and direct delivery. This method typically applies to larger projects requiring heavy civil or concrete work, and as such has not been used as much as the first method.

In addition to the delivery methods above, there are variations used for specific projects and programs, for example, for projects not "labeled" Vision Zero, or for specific Vision Zero project types:

- **Complete Streets Program:** Initially, BOE led a multidepartment scope development process with mixed in-house and contract delivery. This wasn't really a complete streets program per the teams since it was a reconstruction of failed streets program. Funding sources for Vision Zero and for Complete Streets are separate. Stakeholders felt it was more effective to work on both while the street was open, yet coordination between the two programs experienced challenges. Over time, Complete Streets is credited with having accomplished multiple significant, transformational projects such as involving major civil works changes and the participation of multiple departments. The program was eventually wound down due to challenges in scaling and in embedding Vision Zero projects.
- **Traffic signals/crosswalk beacons:** LADOT selects locations and leads signal design, BOE leads civil design, and there are various arrangements of in-house and contract delivery.
- **Pedestrian refuge islands:** LADOT selects locations; BSS designs and delivers in-house.

2. LADOT defines the scope of all Vision Zero improvements. BSS and BOE define the scope for their own (non-Vision Zero) projects, but they take the opportunity to implement the Vision Zero element where applicable. Parties outside of LADOT generally aren't accountable to ensure all elements of the Vision Zero Program are implemented. Exceptions include BSS due to involvement in scope definition and design process of pedestrian refuge island projects, and BOE—not planning agency or the asset owners—helping LADOT and BSS deliver Vision Zero projects from an engineering and design perspective.
3. The Public Works Department (i.e., BOE, BSS, and others) does not prioritize Vision Zero improvement projects over larger priorities such as sewer projects that receive hundreds of millions and billions in some cases.
4. The program delivery team indicated that there have been a couple of instances where LA Metro wanted to build a bus-only lane, in locations where the Vision Zero team wanted to implement a bicycle lane or curb extension, resulting in conflicts (e.g., Colorado Boulevard, Broadway, Vermont). Policies and procedures were not in place to reconcile agency priorities, particularly on how safety and mobility improvements are determined. Partly in response to this, LA Metro issued a street safety, data sharing, and collaboration policy and action plan in June 2022.

IMPROVEMENT OPPORTUNITY 7.1	Use former Complete Streets implementation framework as a template for interdepartmental coordination for the identification, prioritization, and implementation of large and multifaceted Phase 3 improvements.
IMPROVEMENT OPPORTUNITY 7.2	Coordinate Vision Zero Program priorities and systemic initiatives with BSS, particularly in resurfacing and restriping efforts. This could accelerate implementation of systemic improvements by incorporating safety upgrades, such as improved crosswalk striping, in alignment with Vision Zero objectives. Assure all relevant asset management plans for street infrastructure are supportive of Vision Zero and vice versa.
IMPROVEMENT OPPORTUNITY 7.3	Consider housing long-range Vision Zero project development under BOE, which seems to have the necessary resources and expertise to facilitate more strategic planning and coordination, especially for Phase 3 projects. Towards that end, increase BOE Vision Zero funding and involvement.

TOPIC AREA 8: CITY STREET DESIGN GUIDELINES

EVALUATION CRITERION: The City Street Design Guidelines need to be up to date and align with the Vision Zero Program so as to be mutually reinforcing.

FINDING 8: The current Street Design Manual is over 50 years old (1970) and is not set up to prioritize Vision Zero Program Implementation.

BOE's **Street Design Manual** was developed in the early 1970s. Some elements were updated in 1986; however, major sections have been in effect since 1970. Since then, common understanding of roadway safety, multimodal use, and the nexus of speed and traffic efficiency has evolved significantly. Federal design guidance has also evolved, with an emphasis on Vehicle Miles Traveled (VMT) replacing the prior focus on Level of Service (LOS). In other words, throughput and speed have been de-emphasized, while safety, modal choices, and VMT are all taking on a higher priority in street design.

In 2015, as part of its approval of the Mobility Plan 2035, the City of Los Angeles adopted the National Association of City Transportation Officials (NACTO) *Urban Street Design Guide and Urban Bikeway Design Guide*, along with the *Complete Streets Design Guide* developed by the Planning Department. The latter was developed as guidance and is nonbinding for projects from an engineering point of view.

Lastly, the BOE and LADOT together issued the *Supplemental Street Design Guide* in 2020 to provide guidance for Complete Streets safety improvements such as curb extensions, raised crosswalks, mini-roundabouts, and others. However, standard plans and technical design manuals for the safety improvements were not included.

Continuing to rely on a legacy Street Design Manual with separate, more modern road configuration guidance documents allows the possibility that a new construction or rehabilitation project could be delivered absent Vision Zero safety requirements unless specifically identified as a "Vision Zero" project. For example, the City of Los Angeles' Complete Streets Program does not fall under Vision Zero but includes several program components that overlap and may miss elements that the Vision Zero team would typically include. In conclusion, existing city design guidelines available to engineers are not based on Vision Zero. This hampers the integration of Vision Zero safety requirements into many new construction or rehabilitation projects.

There exists a clear opportunity to update the street design standards so that each department is building to the same Vision Zero objective in all roadway construction and rehabilitation projects moving forward. The fullest vision of the Street Design Manual update effort will synthesize guidance that lives in multiple places into a comprehensive standards manual for the City of Los Angeles engineers and planners. The City of Los Angeles has already recognized the urgency of this task. BOE has already been successful in securing some funding, but achieving the full vision will require multiple years of effort.

IMPROVEMENT OPPORTUNITY 8.1	Update the Street Design Manual and synthesize guidance for all related design and guidance documentation—including street standards and street classifications, per latest safety design guidance. Update roadway maintenance and construction procedures accordingly.
IMPROVEMENT OPPORTUNITY 8.2	Because it is the document used to determine project type and location, improve the Safety Toolkit by including detailed design requirements for each improvement type.

TOPIC AREA 9: VISION ZERO PROGRAM PROGRESS

EVALUATION CRITERION: The Vision Zero Program progress needs to be monitored with a clear internal and external communication strategy. As exemplified with a few leading peers, this is manifested by ongoing tracking of meaningful Key Performance Indicators (KPIs) through program reports or dashboards.

FINDING 9: Vision Zero Program progress and delivery of City of Los Angeles actions are not monitored to understand how well they are doing to achieve their goals. This has resulted in a lack of program visibility and transparency.

Clear internal controls are not established to manage, monitor, and control the Vision Zero Program. While the LADOT and other partner agencies have taken many actions to implement Vision Zero Program, failing to monitor and report on the program performance proactively and at a sufficient level of detail left the Mayor's Office, City Council, and the CAO without a baseline information to assess the program performance and to make future investment decisions.

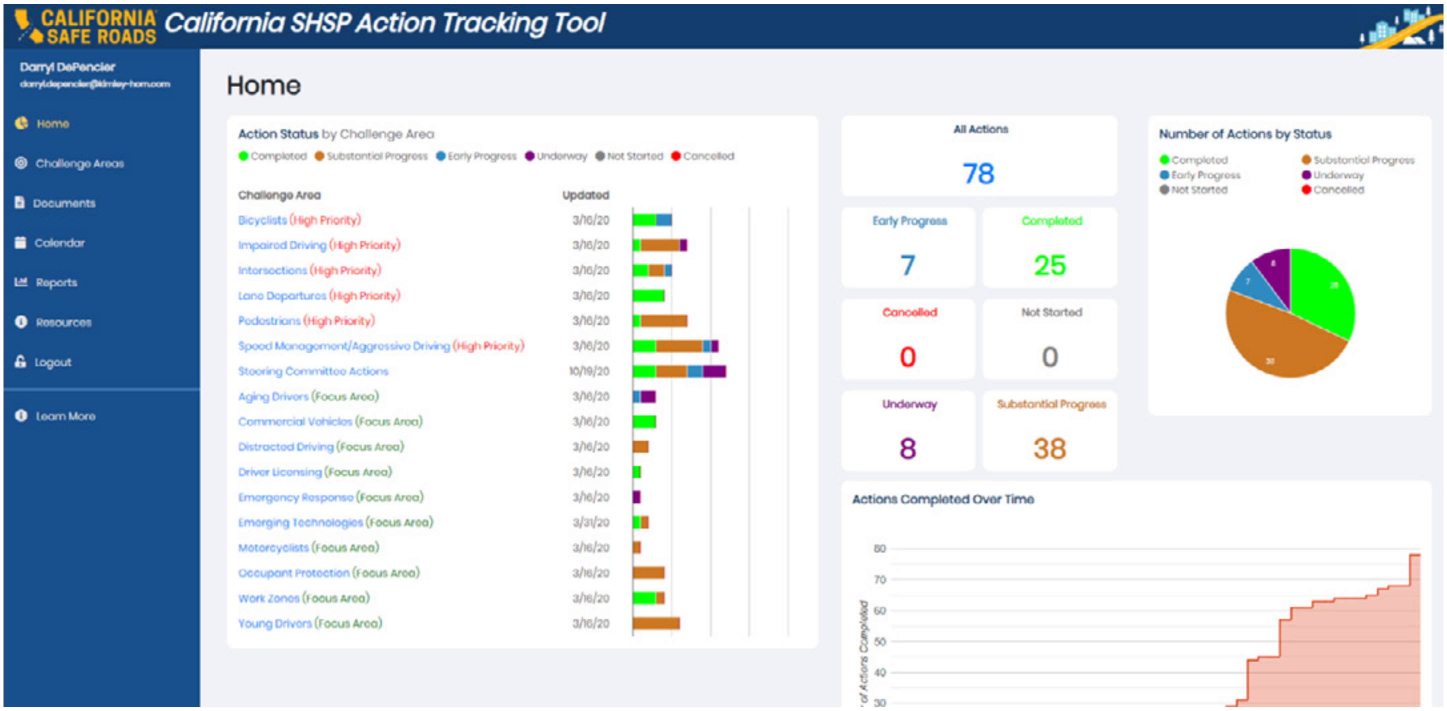
LADOT, effectively acting as the program manager, does not have a defined strategy to measure and monitor the performance of the Vision Zero Program for road safety impacts, cost effectiveness, schedule, and quality, among others.

This lack of monitoring and reporting makes it challenging to know how well the Vision Zero Program has performed in achieving its goals. This led to several negative consequences, such as:

Lack of accountability	Without monitoring progress and delivery actions, it's challenging to hold anyone accountable for the program's successes or failures. This lack of accountability can make it challenging to motivate stakeholders to improve the program's performance. In addition, when team members are not held accountable for their roles, it can lead to a lack of transparency and visibility. Accountability provides a clear chain of responsibility, and without it, it's tough to know who's in charge of what, and where things stand.
Difficulty to track progress	Monitoring progress is vital to understand how effective the program is in achieving its goals. Without such monitoring, it's tough to identify areas where improvements are needed, make changes, or measure the program's impact.
Inability to validate assumptions	An unmonitored program could lead to assumptions being made about its effectiveness, which may not be validated. This can lead to mismanagement of resources, poor decision-making, and an inability to adapt the program over time as new data and information become available.
Challenges in communicating progress to stakeholders	Monitoring progress and delivery actions is essential to understand the program's performance and communicate this information to stakeholders. Without such communication, it's challenging to obtain buy-in and support from elected officials, community members, and other stakeholders who play a key role in the program's success.

For example, **Figure 17** illustrates how Caltrans developed a web-based tool to track highway safety planning progress.

Figure 17: California Safe Roads Action Tracking Tool – Illustrative



Source: California Safe Roads

To address the issue of unmonitored progress and delivery actions, it's vital to establish a monitoring framework that allows regular tracking of the program's progress and delivery actions. This framework should include KPIs that reflect the program's goals and objectives, be well-defined, and measurable. Establishing regular reporting mechanisms and clear communication channels can help ensure stakeholders are kept informed of the program's progress toward achieving its goals. Ultimately, this monitoring framework can provide necessary feedback for program improvement, increasing accountability, and enabling stakeholders to take appropriate actions to achieve the actions and strategies of the Vision Zero Program.

Other factors caused by the lack of program visibility and accountability include the following (these items are covered in detail as part of other findings):

Poor communication	Lack of communication between teams involved in Vision Zero Program within different departments/bureaus led to the lack of visibility and accountability. For instance, there is only one regular coordination meeting—the engineering working group meeting. When teams exchange information, it's usually requested by the LADOT. In addition, LADOT determines without other key parties' involvement in selecting and prioritizing the safety improvements. Therefore, it is unclear how the teams are choosing the right communication channels.
Inadequate management tools	The absence of proper program management tools and dashboards can contribute significantly to low visibility and transparency. Without the right tools, it's difficult to track and communicate progress, analyze trends, and make timely decisions.
Complex project structure	The City of Los Angeles has complex structures with multiple stakeholders, departments, bureaus, and processes involved. This complexity led to a lack of clear direction and purpose, making it hard to track progress and communicate it effectively.

By understanding these factors, Vision Zero teams can take steps to enhance visibility and transparency and ultimately deliver successful outcomes.

The LADOT Strategic Plan (2021–2023) reports on the metrics related to progress on Vision Zero and public health initiatives. However, they are commitments and not designed to measure and track progress against the Vision Zero actions and strategies. The following are the three high-level metrics related to health and safety mentioned in the plan:

- Eliminate traffic deaths and improve street safety for all—where Vision Zero Program is highlighted
- Transform streets into public space to connect communities
- Increase the share of people walking and biking to support healthy communities.

Improvement opportunities for this topic ought to be tied to the improvement opportunities related to program governance if implemented.

IMPROVEMENT OPPORTUNITY 9.1	As part of overall policy and procedure development efforts, LADOT should clearly define its internal and external reporting process and communication strategy (i.e., beyond the current Annual Reports to Council).
IMPROVEMENT OPPORTUNITY 9.2	Develop a balanced scorecard that assigns annual targets to the key partners of the Vision Zero Program. Build an incentive mechanism into the scorecard to help encourage team commitment, improve overall project performance, reward, and recognize success, foster collaboration, and increase accountability. The scorecard is a strategic planning and performance management tool that encourages teams to work towards common performance goals and can lead to better outcomes, project delivery, and stakeholder satisfaction. This can be achieved by including LAPD traffic safety actions to the leadership performance review process.

A balanced scorecard is one of the tools that can be used to measure the success and progress of the Vision Zero Program. Below is an illustrative example of a balanced scorecard assigning annual targets to key partners:

Financial perspective	• Decrease the economic cost of traffic-related fatalities and injuries by 10% annually. • Allocate a minimum of 15% of the transportation budget to Vision Zero initiatives. • Secure additional funding from grants or partnerships to support Vision Zero projects.
Customer perspective	• Achieve a 90% satisfaction rate in community surveys relating to road safety improvement projects. • Reduce the number of negative feedback from residents related to traffic safety. • Increase the number of positive public testimonials about Vision Zero projects and their impact on safety.
Internal process perspective	• Implement a minimum of 5 high-impact traffic safety projects in the identified high-collision areas. • Increase interdepartmental collaboration by 25%, as measured by the number of joint meetings, projects, and shared resources. • Develop and maintain a comprehensive data collection and analysis system that provides real-time feedback on project effectiveness and informs decision-making.
Learning and growth Perspective	• Increase general awareness of Vision Zero among the public by 20%, as measured by surveys, social media engagement, and traditional media coverage. • Train 100% of transportation and safety department staff in Vision Zero principles, practices, and implementation processes. • Establish partnerships with at least 2 new external organizations, such as academic institutions or private sector firms, to collaborate on research, innovation, and implementation of traffic safety projects.

Key Partner Assignments:

Mayor's Office:	1. Secure additional funding for Vision Zero projects. 2. Encourage interdepartmental collaboration and support. 3. Advocate for Vision Zero and raise public awareness.
City Council Districts:	1. Allocate necessary resources for Vision Zero initiatives. 2. Engage with and address community concerns and feedback related to traffic safety projects. 3. Prioritize traffic safety in the local political agendas.
LADOT and other City Departments:	1. Implement high-impact traffic safety projects in high-collision areas. 2. Develop a comprehensive data collection and analysis system. 3. Train staff in Vision Zero principles and practices.
LAPD:	1. Enforce traffic safety laws consistently and effectively. 2. Participate in community engagement and education efforts promoting traffic safety. 3. Share collision data with other departments to inform decision-making.
Community Organizations:	1. Engage the public in advocacy and education efforts promoting Vision Zero goals. 2. Collaborate with city departments on project planning and implementation. 3. Provide community-based feedback on current and proposed traffic safety measures.

By establishing clear targets and assigning responsibilities to key partners, the Vision Zero Program can better track progress, efficiently collaborate among stakeholders, and achieve its ultimate goal of reducing traffic-related fatalities and serious injuries.

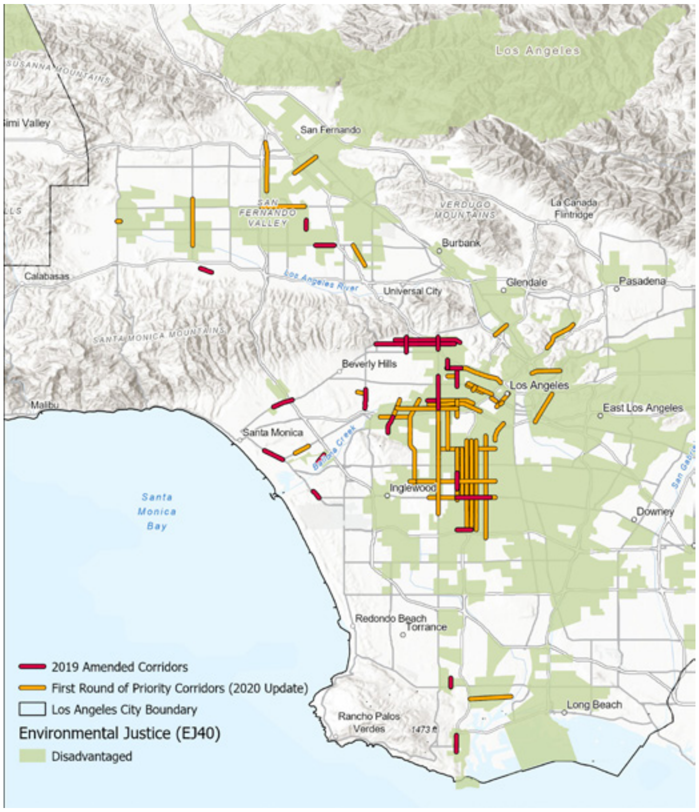
TOPIC AREA 10: EQUITY IN PROJECT PLANNING AND IMPLEMENTATION

EVALUATION CRITERION: Equity in project planning and implementation should be approached systematically and transparently.

FINDING 10: The Vision Zero Program has made efforts to embed equity in project selection and implementation, addressing previous investment disparities and promoting a more equitable distribution of resources. However, there is no systematic and holistic approach to planning and implementation of Vision Zero safety improvements in historically underinvested neighborhoods and for vulnerable road users.

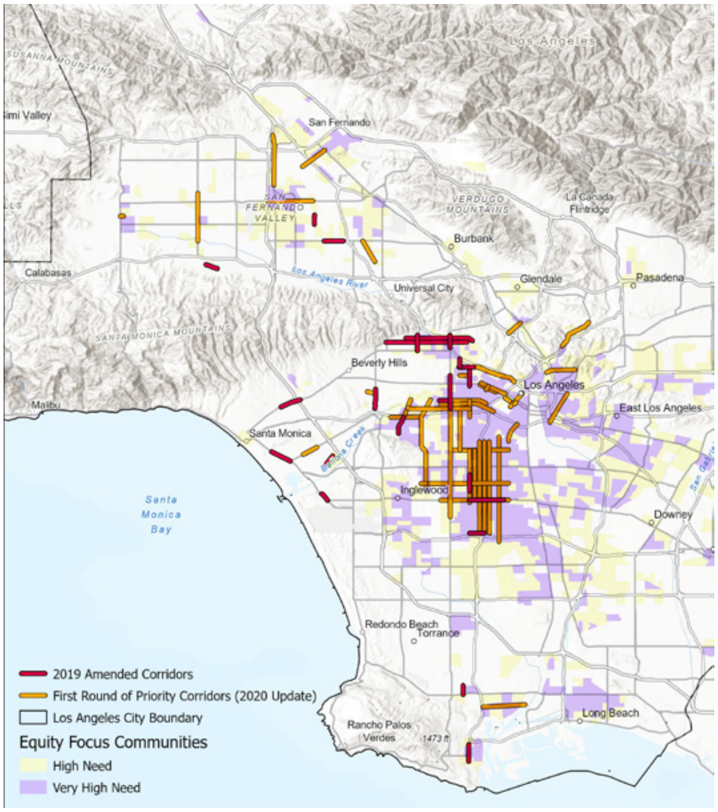
The first round of Priority Corridors (40) was identified in 2017. LADOT gave additional weight to intersections with a death or serious injury involving a bicycle or pedestrian, where the intersection was in a high-needs community, and where crashes involved a senior or a child. Per City Council guidance, in 2018 LADOT identified a new list of Priority Corridors (20)[19,20] using a new methodology, which ranks corridors on the HIN simply based on the number of people who have been killed or seriously injured across all modes, without additional weighting. The program and all the corridors identified over the years acknowledge the historic inequities in roadway investments and emphasize equity by prioritizing projects in underserved communities **(Figures 18** and **19)**. This focus is appropriate and aligns with the goal of ensuring equal access to safe transportation for all residents.

Figure 18: Disadvantaged Communities by Justice40 Initiative



Source: White House EJ40 Initiative (https://www.whitehouse.gov/environmentaljustice/justice40/)

Figure 19: LA Metro's Equity Focus Communities



Source: Updated 2022–METRO EFC Dashboard accessed on July 2023

[19] City of Los Angeles Inter-Departmental memorandum, Vision Zero Implementation Strategy of the Traveling Public (CF 17-1137), November 19, 2018

[20] Vision Zero Geohub, https://visionzero.geohub.lacity.org/, accessed on July 2023.

While the program acknowledges the equity concerns, it needs to be stated that crash rate and social vulnerability have always been significantly correlated in highly urbanized regions. This can partly be explained due to the traffic volume, road geometry, inequity in transportation, and transportation-related public health in low-income communities.

One of the challenges faced by the Vision Zero Program is the resistance mounted by some communities to changes that could increase travel times, reduce available parking, or otherwise impact current mobility patterns. It's also important to take a holistic view of the planning stages for equity, meaning assessing at detailed level, socio-economic impacts that would arise from different Vision Zero solutions and whom they would affect (e.g., low-income, unhoused, and/or minorities).

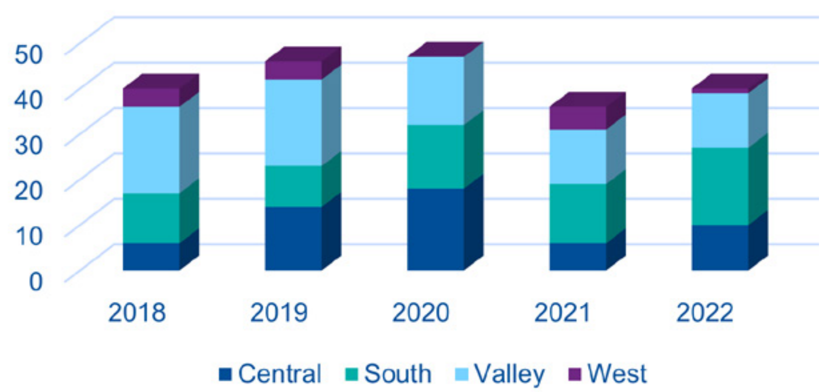
To overcome these challenges, there is a need first for better equity planning. Then, community engagement and communication strategies can be adjusted accordingly to address any concerns and clarify the broader goals and benefits of the program. Finally, integrating diverse perspectives and exploring holistic approaches can help create comprehensive, city planning-level solutions beyond the addition of bike lanes.

Homelessness and Road Safety

The project team performed a high-level review of LAPD data from 2018 to 2022 to begin to assess the correlation between homelessness and road safety. The LAPD reported the data across four bureaus as follows: Central, South, Valley, and West (see **Figure 20**). The following conclusions were drawn:

- Homeless fatalities were generally flat over the five-year period, with a dip in 2021 during the middle of the Covid-19 pandemic following a period of increasing fatalities up to 2020.
- There was a high variation by bureau, with the Valley (37%) and South (31%) bureaus accounting for 68% of the homeless road safety fatalities in Los Angeles over the last five years.
- Pedestrian violations were the leading cause of the fatalities reported, representing 66% of the events, well above unsafe speeds, DUI-caused, unsafe turning, and other causes.

Figure 20: Los Angeles Homeless Fatalities by Bureau



Source: LAPD

According to the numbers, unhoused traffic fatalities during the pandemic did not suddenly increase. In fact, 2021 saw a considerable dip. However, the Vision Zero Program has yet to conduct a formal analysis of the correlation between homelessness and traffic safety. Seizing this opportunity to understand the unique challenges faced by the homeless population and their interactions with the street environment can lead to better targeted interventions and more equitable outcomes.

IMPROVEMENT OPPORTUNITY 10.1	Update the HIN and priority corridor selection methodology to explicitly focus prioritization of disadvantaged communities and opportunity areas. As part of the public outreach process, involve community members in the priority corridor selection process.
IMPROVEMENT OPPORTUNITY 10.2	Integrate diverse perspectives and explore holistic approaches to unlock city planning-level solutions that are community focused and take a collaborative approach to corridor visioning and project development.
IMPROVEMENT OPPORTUNITY 10.3	Provide special attention to projects that impact vulnerable road users, including pedestrians, motorcyclists, the unhoused, and construction workers who are more likely to be on the street exposed to vehicular traffic.

5 CITY SUPPORT

CITY SUPPORT

This chapter presents the evaluation of overall city support of the Vision Zero Program. For additional background information, such as new laws passed in California relative to road safety, consult **Chapter 2**. This evaluation resulted in three finding areas as follows:

- Regulatory Environment
- Mayor's Office and City Council Districts
- Traffic Safety Enforcement.

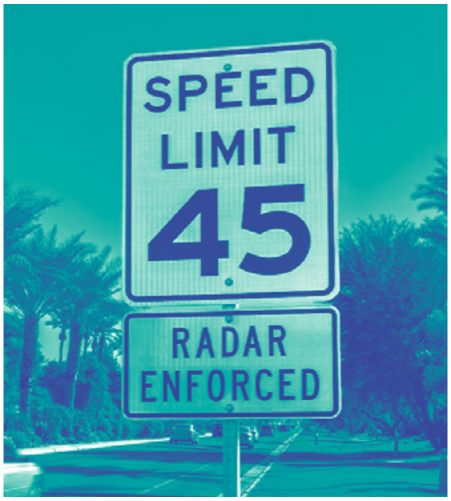
TOPIC AREA 11: REGULATORY ENVIRONMENT

CRITERION: The regulatory environment fully supports accomplishing Vision Zero goals. Examples include equitable laws in place that have demonstrated a positive effect on curbing traffic speeds and reducing the number of crashes (e.g., automated speed enforcement).

FINDING 11: The current regulatory environment limits the City of Los Angeles' ability to accomplish the Vision Zero Program goals (e.g., red light enforcement, automated speed enforcement), but opportunities for improvement are on the horizon.

All three of the FHWA's proven safety countermeasures for speed management are either not allowed or are limited by current California state regulation.[21] These three measures are:

- **Setting appropriate speed limits –** Using proper traffic engineering procedures and data to set reasonable and safe speed limits
- **Automated enforcement –** Using speed cameras and radars in high-risk areas to improve compliance
- **Variable speed limits –** Adjusting speed limits based on real-time conditions like weather or congestion.



Speed Limits

In California, speed limits cannot be arbitrarily set or changed without conducting engineering and traffic surveys. The California Vehicle Code has specific requirements for establishing speed limits based on these studies. Local authorities need to conduct a traffic survey or "speed study" before they can set or alter speed limits on most types of roads. This requirement comes from the California Vehicle Code, specifically Section 40802, which is designed to prevent "speed traps." Some key points on speed limit setting in California include the following:

- Speed limits are set by conducting engineering and traffic surveys that examine factors like road conditions, accident history, roadside development, and observed travel speeds.
- Local authorities can set speed limits on streets under their jurisdiction, but they must be justified by an engineering and traffic survey.
- On state highways, Caltrans conducts engineering surveys to establish speed limits.
- Statutory speed limits also exist—for example, 25 mph in business/residential districts. But these can only be applied after an engineering survey confirms the limit is reasonable.
- Speed limits set only for revenue generation from citations are prohibited.

[21] Federal Highway Administration Proven Safety Countermeasures: https://highways.dot.gov/safety/proven-safety-countermeasures

However, there are some exceptions to this requirement. AB 43 modified the process for changing speed limits on local streets in California by eliminating the requirement for a full engineering and traffic survey if the change is within 5 mph. This gave local authorities more flexibility in setting appropriate speeds, as follows:

- AB 43 authorizes local authorities to lower speed limits by 5 mph on portions of their street and highway networks without having to conduct engineering and traffic surveys.
- The law allows lowering speeds from the current statutory 25 mph or 65 mph down to 20 mph or 60 mph, respectively, on these roads.
- Local authorities have to make findings that the lowered speed limit is justified by collision history, traffic volume, and other data. But a full engineering survey is not required.

AB 1938, which became law two years after AB 43 in January 2023, further clarified provisions in AB 43 and set threshold maximums for speed limit reductions. The City of Los Angeles has already repealed recent speed limit increases, so most of the safety benefits from this law are already in place.

Automated Enforcement

Speed cameras cannot be used for traffic enforcement by cities, counties, or the CHP. Automated speed enforcement is viewed as unconstitutional in California without positive identification of the driver. This requirement comes from the California Vehicle Code, specifically Section 40800. However, some limited uses of speed cameras are allowed:

- Speed cameras can be used in school zones for automated speed enforcement, but citations may not exceed $100 and no driver points can be assessed.
- Speed cameras are permitted on rail lines to enforce quiet zones.
- Temporary speed feedback signs that display speeds but do not photograph or ticket drivers are allowed.

Automated red light enforcement was abolished by the Los Angeles City Council in 2011. However, AB 645 passed the Assembly in May 2023 and approved by Governor in October 2023. This bill has an opt-in pilot for six cities in California—Los Angeles, Long Beach, Glendale, Oakland, San Jose, and San Francisco. Cameras would take a picture of the vehicle's license if the speed limit is broken by 11 mph or more. Fines would start at $50, and the program has a provision to reduce fines for those under the poverty line.

Note that more than half the peers had red light enforcement in place; half the peers had automated speed enforcement in place. New York has recent experience with moving to operating their speed cameras on nights and weekends, as opposed to just on weekdays during daylight hours, and saw fatalities decrease by 25% prior to the 2023 change.

Variable Speed Limits

Variable speed limits are not expressly prohibited in the California Vehicle Code, but there are some statutory provisions that currently limit their use:

- **VC 40800**—prohibits speed traps and requires speed limits to be justified by engineering surveys. This makes variable limits difficult since the limits aren't tied to a specific engineering study.
- **VC 22352**—establishes statutory speed limits, which don't provide for variable or conditional speeds.
- **VC 21400(b)**—requires official traffic control devices to be consistent with uniform standards and specifications. Variable speed limit signs are not currently included in the California Manual on Uniform Traffic Control Devices (MUTCD).
- **VC 21401**—prohibits local authorities from enacting any ordinance in conflict with the Vehicle Code provisions regulating traffic devices. This makes creating variable limits by local ordinances more challenging.

While not completely banned, the Vehicle Code lacks explicit provisions authorizing variable speed limits. The statutes emphasize consistent, uniform traffic control devices based on engineering judgment.

LADOT has actively been engaged in statewide efforts towards maintaining or reducing speed limits, as well as for automated speed enforcement. These efforts are undertaken in concert with the Mayor's Office and City Council.

In addition to these areas, other emerging potential regulatory opportunities exist, and some are being developed and/or adopted in other parts of the country and the world. In August 2023, the California Public Utilities Commission voted to approve full commercial passenger service using driverless cars in San Francisco, 24 hours per day. The examples of potential new safety regulations (potentially with fees) relate to the following:

- Electric Vehicle standards, such as audible warnings
- Line of sight/direct vision standards, especially for large buses, trucks, and Sport Utility Vehicles (SUVs)—particularly impacting pedestrians, cyclists, and motorcyclists
- Trends in vehicle design and weight, for example, requiring guiderail height increases to address larger and heavier vehicles
- Introduction of autonomous/driverless vehicles.

Vision Zero policy and related policies have contributed to making London a more environmentally conscious and safer city to live in. London's approach incorporates improved air quality measures, initiatives towards ultra-low emission zones, the decrease in the prevalence of motor vehicles, and the creation of what they term "Healthy Streets." This approach emphasizes active travel options—walking, cycling, and public transportation— reducing reliance on cars. London eventually hopes to achieve 80% of all trips via one of these modes. Public transportation in particular is a much safer surface transportation option for residents than driving.

From a technology point of view, the city has deployed intelligent speed assistance on vehicles, 850 speed cameras, and audible warnings on Electric Vehicle buses. London has also developed a star rating system to address direct vision challenges for heavy vehicles and only acquires "5 star" cleared buses and maintenance vehicles. Given the large size of its vehicle fleet, the city has clout with vehicle manufacturers. Every 2–3 years, the standard ratchets up for permissible noncity large vehicles operating within the city.

IMPROVEMENT OPPORTUNITY 11.1

Support statewide actions of Vision Zero-aiding legislation such as automated speed enforcement, for example, implementation of AB 645 implementation. The City of Los Angeles should prepare implementation strategies in expectation of eventual passage with the proposed opt-in provision and proof of concept and talk to peers about their experience.

IMPROVEMENT OPPORTUNITY 11.2

Support the eventual use of automated red-light cameras. Studies have shown the automated enforcement reduces fatalities where used. If there is opposition to increasing their use, then consider a modified version of red-light enforcement that treats an automated infraction similar to a parking ticket instead of a traffic infraction. This change would reduce the burden on the legal system and law enforcement resources and can also help foster a more positive relationship between law enforcement and the community, as the public may perceive the enforcement of red-light violations as less punitive and confrontational. As a follow-up action, consider developing a policy for automated red-light enforcement to target intersections in a reduced geography, such as along the HIN, and sensitive land uses, such as schools.

IMPROVEMENT OPPORTUNITY 11.3

Explore adoption of new legislation that would target some of the new vehicle technology revolution with respect to quiet Electric Vehicles (autos, trucks, buses), autonomous/driverless vehicles, and direct vision standards. Set in motion a research program(s), potentially state funded.

TOPIC AREA 12: MAYOR'S OFFICE AND CITY COUNCIL DISTRICTS

EVALUATION CRITERION: Mayor's Office and City Council Districts are aligned and champion Vision Zero advancement.

FINDING 12: Insufficient support from the Mayor's Office and City Council Districts has at times limited the effectiveness of Vision Zero Program delivery.

One of the challenges faced by the City of Los Angeles Vision Zero Program lies in managing the political pressures and concerns raised by the multiple stakeholders. Making changes to the physical environment, just like passing new laws and regulations, is hard work and not always popular—even if designed to save lives. In certain instances, stakeholders may resist or oppose proposed projects, citing concerns about their potential impact on local businesses and residents. Addressing these concerns and finding common ground is essential to garner support and advance individual safety improvement projects.

Engaging early and often with council members and other stakeholders in a constructive dialogue presents an opportunity to foster a deeper understanding of the program's objectives and the potential benefits it brings to the community. By actively listening to concerns and providing clear and transparent information, Vision Zero proponents can alleviate apprehensions and build consensus around proposed projects.

The way political power is distributed in Los Angeles affects the Vision Zero Program as it does other initiatives. The Mayor's Office role is normally to govern and direct agencies/departments, which includes advocating for safety and helping to convene stakeholders where appropriate. This should apply to the Vision Zero Program, a citywide initiative. The Los Angeles City Council is the legislative body of the City of Los Angeles, with 15 members each representing a single-member district.

Executive Directive No. 10 from Mayor Garcetti set the Vision Zero Steering Committee to "work with my Office and City Council to report on Vision Zero efforts." This Steering Committee steered the ramping up of the Los Angeles Vision Zero project across multiple departments. However, it met for about three years and then stopped meeting. The quarterly reporting to the Mayor's Office was gradually replaced with an annual report to the City Council.

According to feedback from multiple interviews, the level of oversight of the Vision Zero initiative diminished over time and so has the level of enthusiasm at City Hall. Some of the reasons cited include the pandemic, conflicts of personality, lack of total buy-in for implementation, disagreements over how the program should be administered , and scaling issues ("Vision Zero does not scale to a level where you can easily see results"). As mentioned above, a detailed charter of roles/ responsibilities and process mapping was never developed.

Since the ramping up of the Vision Zero Program in 2017, City Council members have vetoed multiple projects (for example, Adams Boulevard, which was ultimately implemented). Individual Council districts can have an outsized role in facilitating or blocking Vision Zero projects. The reasons are multiple, but often caused by neighborhood opposition and/or the individual views of the council member where the project is located. There are times where neighborhood opposition can be (and has been) overcome with a good public outreach campaign, in which the benefits of Vision Zero (and other nonsafety project benefits) are properly explained in context.

A common view expressed in the interviews was that ideally there would be alignment between the Mayor's Office vision for the program and implementation of individual Vision Zero projects—often requiring City Council's support. This has proven to be difficult in the 2017–18 timeframe as the Vision Zero Program was growing, but has become easier after that, particularly after the Adams Boulevard project. This balance between fulfilling a citywide goal and meeting the specific needs of local stakeholders in neighborhoods needs to be managed on an ongoing basis.

For instance, it has been challenging to accomplish bike lane projects that are in the right of way of more than two council districts because some council district members and communities are not open to the idea of bike lane. It's indicated that they either worry about the impact on their businesses or didn't agree with the necessity of bike lanes. On the other hand, some council districts supported a larger vision of Vision Zero than was ultimately adopted in recent years. The interviews with the program delivery teams revealed that some communities and council district members did not initially support Vision Zero Phase 1 level improvements, but changed their minds when bigger scale, transformational Vision Zero projects were proposed to them (e.g., complete street improvements over striping).

In summary, insufficient support from the Mayor's Office and City Council Districts can limit the effectiveness of the Vision Zero Program delivery in several ways. Understanding these limitations can help in finding ways to improve the program's success.

Limited political backing	Vision Zero requires strong political support to enact necessary policy changes and prioritize traffic safety measures. Lack of endorsement from the Mayor's Office and City Council may negatively impact the program's progress.
Lack of prioritization	If the Mayor's Office or City Council Districts do not prioritize Vision Zero, it may not receive the necessary resources to be effectively implemented. This could include funding, staff time, and political support.
Conflicting priorities	Politicians and elected officials may have conflicting priorities, like economic development, housing, and other pressing issues, resulting in reduced attention to traffic safety improvements and other related initiatives. This can lead to compromises that limit the effectiveness of Vision Zero initiatives.
Local opposition	Some community members may not support certain traffic safety improvements, fearing they could negatively impact their neighborhood or property values. This opposition can sway elected officials to be hesitant in implementing Vision Zero elements, which may limit the program's effectiveness.
Bureaucratic hurdles	Implementing Vision Zero requires coordination between various city departments, which can sometimes lead to bureaucratic delays or communication breakdowns that slow down the progress of the program.
Inconsistent messaging and communication	Inadequate support from key stakeholders can lead to inconsistent messaging about the program's goals and a lack of clear communication to the public about the importance of traffic safety. If the Mayor's Office and City Council Districts do not actively promote or educate the public about Vision Zero, community members may not understand or prioritize traffic safety improvements, leading to less public support.
Resistance to change	Without sufficient backing from the Mayor's Office and City Council, Vision Zero may face resistance from various stakeholders, such as community groups, businesses, and residents, who may be opposed to proposed changes in infrastructure or road use.

To counter these limitations, the Mayor's Office and City Council Districts can:

- **Prioritize Vision Zero** in political agendas, demonstrating a commitment to the program and raising its profile in the community.
- **Collaborate effectively among city departments and stakeholders**, fostering a sense of shared responsibility for traffic safety and streamlining implementation processes.
- **Engage with the community** to build awareness, understanding, and support for the program by educating the public on its goals and the importance of traffic safety improvements.
- **Ensure consistent messaging and clear communication across all levels of government**, emphasizing the desirable outcomes of the program, such as saving lives and promoting safer streets for all road users.
- **Address concerns and opposition** by involving stakeholders in the planning and implementation processes, fostering a sense of ownership and commitment to the program's success.
- **Promote the benefits of Vision Zero** more widely, emphasizing its ultimate goal of reducing traffic fatalities and serious injuries while improving overall quality of life for all residents.

IMPROVEMENT OPPORTUNITY 12.1	Establish a clear and ongoing mandate from the Mayor's Office. The mandate would include regular outreach to the City Council and to key departments (LADOT, LAPD, and Public Works) to enable alignment with goals and expectations. Work towards creating a fully integrated culture of prioritizing traffic safety throughout all departments and operations. Establish one or more political champions for Vision Zero in the Mayor's Office.
IMPROVEMENT OPPORTUNITY 12.2	Set up oversight processes at the Mayor's Office such as: • Reinforce the importance of a centralized program management unit (if approved) through political leadership • Prioritize implementation of Vision Zero Program (prioritizing safety improvements, supporting development of new policies, law enforcement, and aligning resources) • Develop a stakeholder engagement strategy with collective efforts from Mayor's Office, City Council, and the city departments • Provide leadership and guidance for creating a safety culture and Vision Zero principles in government, industry, and communities • Provide political support: The City Council or Mayor's Office can provide political support for the project by engaging with the community and stakeholders to build support and understanding for the project's importance. Political support from local officials can create the necessary momentum for successful project delivery.
IMPROVEMENT OPPORTUNITY 12.3	Involve local businesses and residents in the public outreach process. By incorporating their perspectives and incorporating their feedback into project planning, Vision Zero Program leadership can ensure that their concerns are addressed and that the proposed improvements align with the community's needs and aspirations to the extent possible.

TOPIC AREA 13: TRAFFIC SAFETY ENFORCEMENT

EVALUATION CRITERION: Traffic Safety Enforcement is a vital part of any Vision Zero Program. A core principle of the Safe Systems Approach is the shared responsibility for traffic safety between roadway users. Enforcement is the mechanism with which we hold these users accountable for their role in traffic safety.

FINDING 13: LAPD participation in the Vision Zero Program has diminished over time, negatively impacting program goals.

The role of the LAPD has changed over time due to uncertainty within the department, recruiting challenges, budgeting, and the political atmosphere. Per interviews, the LAPD currently has approximately 9,000 officers, which represents a decrease of about 900 officers compared to the 9,900 officers it had in mid-2020.

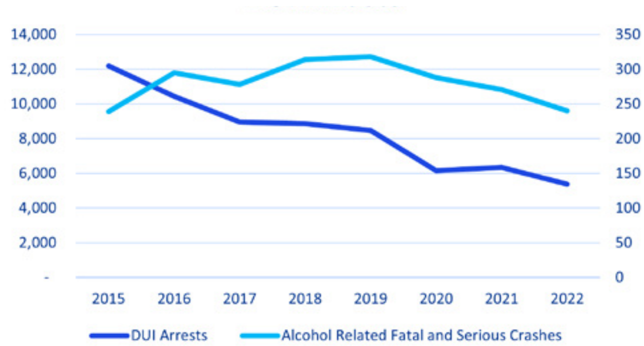
A budget of $1.5 million was earmarked from the city budget to cover Vision Zero overtime hours in 2017–18. This budget allocation did not actually represent new money but a reallocation of existing resources, a labeling meant to channel resources towards the Vision Zero Program.

When the Vision Zero Steering Committee and Task Force stopped meeting in 2018, the city lost a useful forum to collaborate on Vision Zero goals and nothing quite replaced this level of interaction. The reduction in the LAPD workforce in the last two years directly impacted the traffic divisions including, Vision Zero efforts. According to one source, compared to three years ago, there are up to 28% fewer officers to deploy on traffic duty. The disproportion in reductions in the overall force and the traffic duty (28% versus 9%) means other LAPD needs were considered to be higher at the time. Finally, since 2020 the national protests spawned a “Defund the Police” movement that also affected LAPD decision making. As a result of all of these factors, the focus has in effect become more reactive and shifted towards responding to 911 calls. LAPD does still conduct speed enforcement, bicycle, and pedestrian details. LAPD conducts DUI patrols where multiple officers are deployed to flood areas of interest. However, there is no discernable LAPD activity specifically identified as Vision Zero.

The interviews identified that LAPD faces a notable challenge of not always having explicit and unequivocal direction, potentially affecting its ability to contribute effectively to the program’s goals. The annual allocation of $1.5 million has not been indexed to inflation or cost of labor and is therefore becoming less impactful over time.

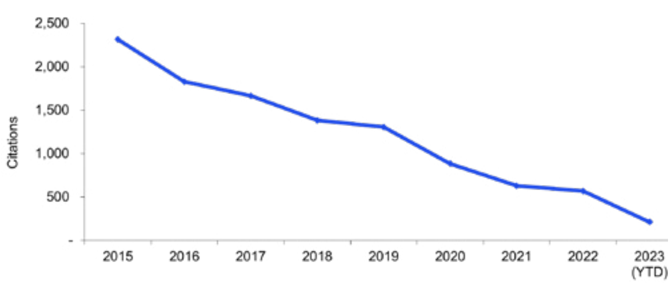
As a result of all of these factors, there has been a pattern observed over the years in terms of declining DUI arrests (**Figure 21**) and total citations related to safety (**Figure 22**). When examining specific citation types, such as Right of Way, Pedestrian, and Bike Related Citations, a similar downward trend is observed (**Figures 23** and **24**). The counts and shares of these citations have consistently decreased over the years.

Figure 21: Trend in DUI Arrests



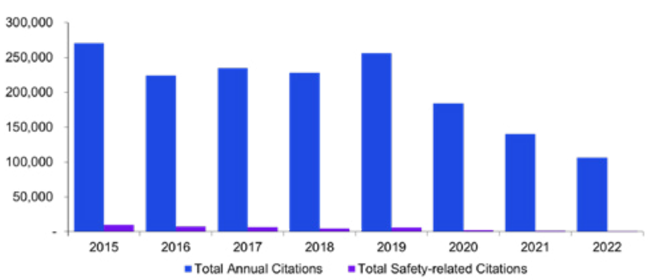
Source: LAPD

Figure 23: Trend in Right-of-Way Citations



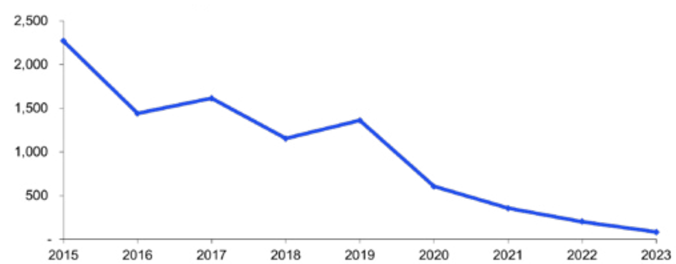
Source: LAPD

Figure 22: Trend in Citations by LAPD



Source: LAPD

Figure 24: Trend in Pedestrian Citations



Source: LAPD

Alcohol-related serious injuries and fatalities have not declined in proportion with the decline in related arrests. According to the DMV's DUI Management Information system, at the statewide level, DUI arrests declined by over 40% between 2009 and 2019 while alcohol-related fatalities and injuries have remained steady.

As of 2023, AB 2147, also known as The Freedom To Walk Act, allows pedestrians in California the right to cross the street anywhere given that it is safe to do so. Officers may still cite a pedestrian for unsafe behavior but may be disincentivized to do so given that it will be harder to obtain a conviction.

One of the four goals of Vision Zero is to "develop a culture of safety" and LAPD plays a significant role in creating a safety culture and working towards the goal of eliminating traffic fatalities. There are actions and strategies identified in the 2017 Vision Zero Action Plan to achieve this goal. However, out of six strategies identified with target completion dates 2017 and 2020, only two are in progress and none of them are achieved as of today. By prioritizing road safety and utilizing principles like Vision Zero and other safety initiatives, innovative technologies, effective community partnerships, and education, LAPD can contribute significantly to the creation of a safety culture.

IMPROVEMENT OPPORTUNITY 13.1	The City of Los Angeles should clarify the role of LAPD in the Vision Zero Program through a new chartering process (e.g. roles/responsibilities setting workshop) to identify roles and responsibilities. Lasting engagement and partnership strategies ought to be developed, including enhancement of collaboration efforts (e.g., injury and near-miss data sharing, HIN/priority corridor updates, and joint education campaigns) between LAPD and LADOT. Examples of target behaviors for enforcement include reckless driving, driving under the influence, speeding, and mobile phone use while driving.
IMPROVEMENT OPPORTUNITY 13.2	Consistent with role clarification, the resources devoted to traffic safety enforcement are a priority. The specific level ought to increase significantly from the current $1.5 million per year, proportional to the impact on deterring risky driving behaviors and preserving human loss of life and injury.

6 VISION ZERO PROGRAM BENCHMARKING

VISION ZERO PROGRAM BENCHMARKING

BENCHMARKING METHODOLOGY

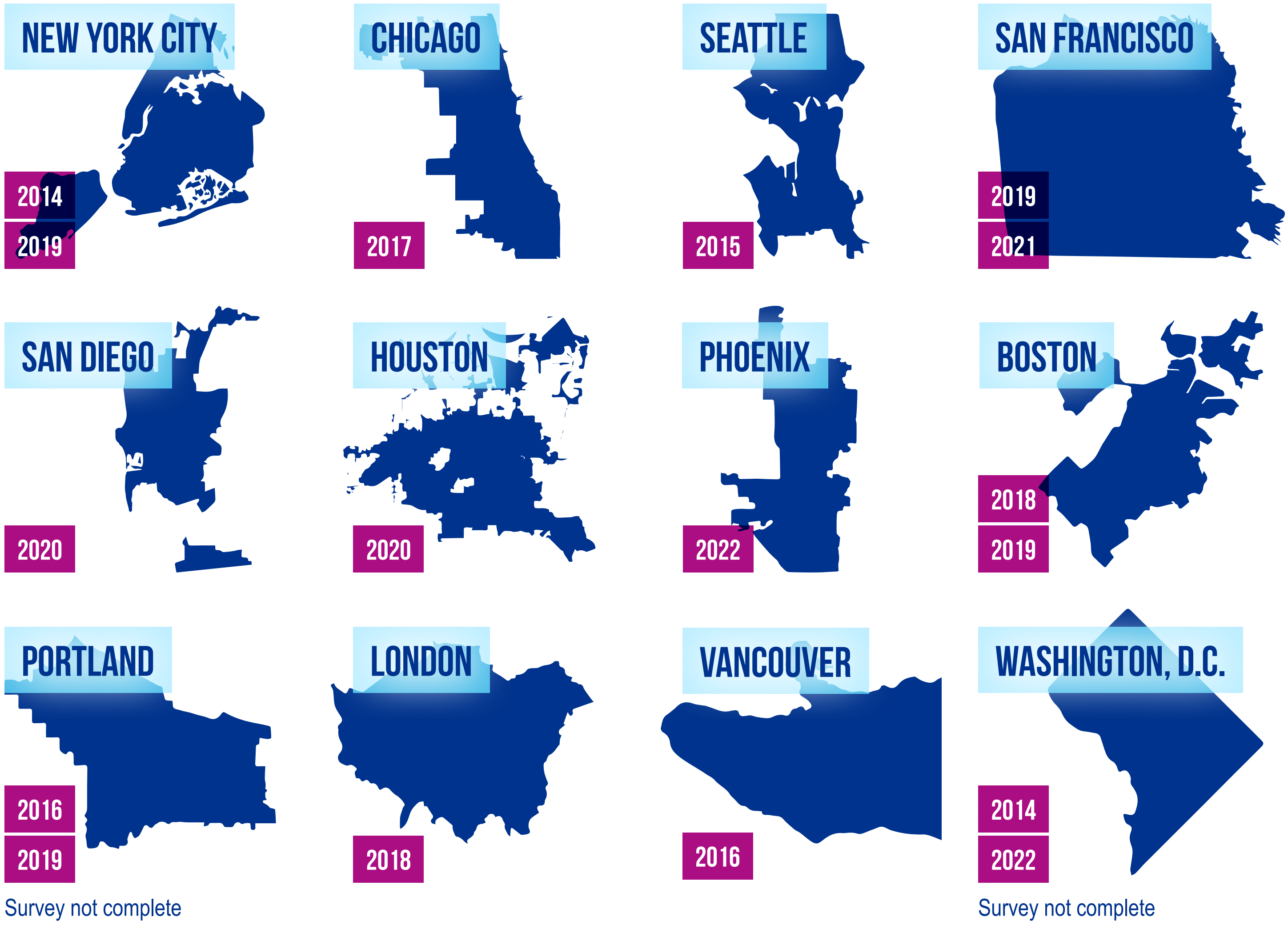
Peer Selection Criteria

Through an iterative process, CAO selected six peer selection criteria as follows:

- Relative city size and traffic volumes
- Representation of West Coast and national peers
- Reputational best practices and peers specifically named during interviews
- Vision Zero cities that already underwent a comprehensive program evaluation (e.g., Seattle, Washington DC)
- Balance of cities with similar organizational structure (e.g., New York, Boston), self-sufficient DOT model (e.g., Washington DC, Seattle) and integrated public works model (e.g., Houston Denver) to compare potential model on program success
- Consideration of international peers (London, Vancouver).

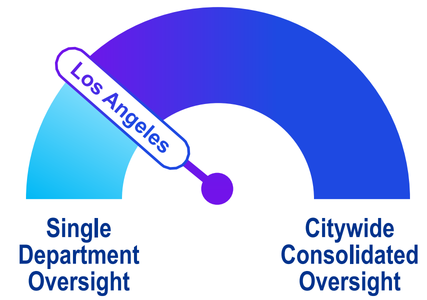
Peer Cities and Programs

The final list of peer cities is presented below, with the year of Vision Zero Acton Plans.

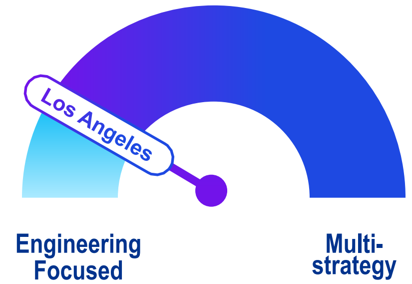


BENCHMARKING SUMMARY

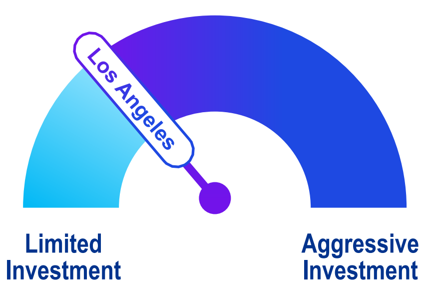
The City of Los Angeles is experiencing increasing traffic fatalities similar to other agencies and the nation as a whole



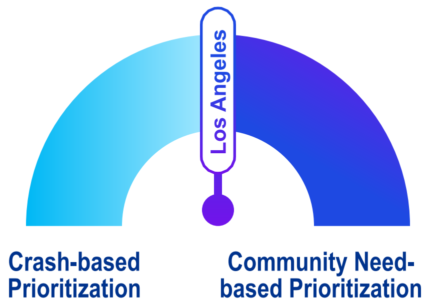
LA Vision Zero is housed and managed by the Department of Transportation without a Citywide oversight committee, unlike most peers



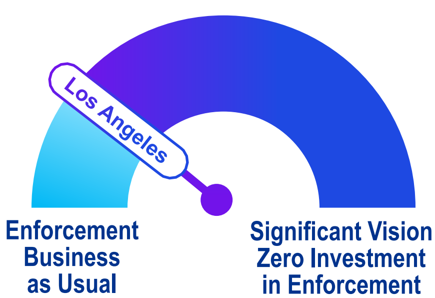
LA Vision Zero is more Engineering-focused than most peers



Los Angeles budgets approximately $40M per year directly labeled as Vision Zero which is less than many peer cities. However, many roadway safety investments are constructed through other funding mechanisms



Los Angeles has included equity factors in priority corridor identification, but has not yet implemented a routine approach to ensure that equity is a part of initial planning and investment prioritization.



Enforcement participation has been declining over the life of the Vision Zero program. Investments in enforcement are not benchmarked to specific outcomes or priorities.

Most of the peer cities reported that their traffic fatalities are increasing despite investments being made through their Vision Zero Programs. Cities that did report reductions in fatal injuries over the life of their Vision Zero Programs reported successes related to enforcement strategies, broad implementation of systemic countermeasures, and successful public awareness campaigns. Several of the cities that reported increasing traffic fatalities have implemented routine assessments of facilities that have been addressed through Vision Zero have indicated that locations that have been improved have had reductions in traffic fatalities.

Buffered bicycle lanes, roadway configurations that reduce traffic speed, protected left-turns, and treatments that shorten crossing distances for pedestrians were indicated as the most effective countermeasures.

Introduction

When evaluating a program as comprehensive as Vision Zero, it is often helpful to reference other municipalities of similar size and governmental structure to obtain contextual benchmarks to measure the success and effectiveness of the program. The Vision Zero Program as it is known today was first implemented in 1997 by the Swedish parliament[22], being implemented shortly thereafter by other European countries such as Norway and the Netherlands. Since then, Vision Zero has been applied in various formats in countries/regions such as Canada, India, the United Kingdom, the Dominican Republic, and the European Union. As of August 2022, more than 45 communities[23] within the United States have pledged their commitment to Vision Zero principles, with Los Angeles being one of the largest involved.

To properly weigh the outcomes of the Vision Zero Program in Los Angeles, a 25-question survey was sent to ten cities of similar population and governmental structure, with questions ranging from how the program was funded to specific countermeasures that were implemented. The cities chosen for the survey included eight cities in the United States, one city in Canada, and one city in the United Kingdom. The cities surveyed were San Diego, California; San Francisco, California; Washington, D.C.; New York, New York; Houston, Texas; Phoenix, Arizona; Boston, Massachusetts; Seattle, Washington; Vancouver, Canada; and London, England. The results of all surveys are available in **Appendix B**.

Survey Results

Although all the cities surveyed have implemented Vision Zero Programs that adhere to the same core principles, the answers to many of the survey questions vary widely, demonstrating the need for localized solutions when adopting Vision Zero. The results of the survey were consolidated into seven categories, with answers from several questions being grouped together to simplify the results of the analysis. These categories form the basis for how the effectiveness of the Vision Zero Program for the City of Los Angeles can be measured in comparison to similar cities.

Impetus for Vision Zero

While all the peer cities surveyed share the same goal of creating safer streets for all and wanting to reduce fatal and serious injuries, their reasoning for implementing an official Vision Zero Program varied. Half of the survey respondents stated that mayoral support was their primary reason for pursuing a Vision Zero Program. An awareness of Vision Zero and its value to policy improvements was the second most frequent answer, followed by a three-way tie between policy recommendations, qualifying for funding, and changes in overall goals/policies.

Mayoral support was the most popular answer amongst the largest United States peer cities, showing that strong public support from residents was the likely impetus for implementing a Vision Zero Program. New York's Mayor implemented Vision Zero shortly after taking office in 2014, with San Francisco's Mayor following suit in 2014 and Washington D.C. in 2015. At the urging of advocates, the mayors of these large cities made Vision Zero a priority during their elections and time in office. An awareness of the Vision Zero Program and a recognition of its importance was the impetus for the cities of San Diego and Seattle, where advocacy groups helped guide the cities towards adopting the program. Vancouver adopted Vision Zero following a recommendation from the Active Transportation Policy Council, while Phoenix incorporated Vision Zero to ensure qualification for federal funding for transportation projects. London carried out their Vision Zero Program as a means to encourage safer driving behavior after coming to the realization that they needed to shift their strategic goals, being that a modal shift to active/zero-carbon transportation would require calmer streets.

[22] https://actionvisionzero.org/resources/vision-zero-a-brief-history/

[23] https://visionzeronetwork.org/resources/vision-zero-communities/

Strategic Goals of Vision Zero Programs

As Vision Zero is a comprehensive program covering a wide array of policy and infrastructure improvements, determining the strategic goals of each peer city surveyed first required splitting the goals into four overarching categories: Creating SS4A, Developing a Culture of Safety, Adopting Policy and Legislation, and Responding to Relevant Data. These categories stem from goals outlined in the 2017 Vision Zero Action Plan for Los Angeles and provide a baseline in which to compare to the peer cities. SS4A focused primarily on "hard infrastructure" improvements such as upgraded traffic signals and crosswalks, though policy improvements such as updating city design standards were also listed as applicable goals for this category. Developing a Culture of Safety focused on community improvements to help influence behavior, such as education campaigns. Adopting Policy and Legislation centered on governmental changes, such as changing traffic laws and data reporting requirements. Responding to Relevant Data focused on the quantitative methods utilized in Vision Zero, such as crash data collection. Combined, these goals and objectives demonstrated each peer city's methodology for implementing their version of the Vision Zero Program.

Safe Streets for All (SS4A)

The SS4A category is one of the most comprehensive goals, with 12 sub-goals listed as response options in addition to an answer of "other" to allow respondents to list other improvements they have utilized. Upgrading traffic signals and mitigating speeding (especially around schools) were the most common sub-goals for this category, with all cities incorporating these sub-goals as part of achieving the SS4A goal. All cities except one stated that upgrades to the bicycle network and traffic signs were part of their overall SS4A goal, and eight of the ten cities cited Complete Street improvements and updating city design standards as sub-goals. Only two cities listed pavement preservation as one of their sub-goals, likely due to recent investments they've made in pavement resurfacing/roadway expansion. Only four cities stated that temporary street closures, Safe Routes for Seniors, or Safe Access to Play/Safe Routes to School were sub-goals. Several cities also mentioned their implementation of standard lower speed limits, with one setting their default speed limit to 25 mph, and two other cities implementing similar citywide speed limit reductions.

Culture of Safety

In addition to installing various infrastructure improvements to physically creating safety streets for all, cities were asked about their strategies for fostering a Culture of Safety, related to a city's efforts to abstractly influence driver safety and behavior. This goal is comprised of nine sub-goals as response options, along with "other" listed as an option to include answers otherwise not listed. All cities responded "yes" to incorporating community partnerships and partnering with other government organizations as part of their Culture of Safety, while nine of the ten cities affirmed their implementation of a dedicated Vision Zero campaign or a dedicated community-building program. Only one city confirmed partnering with insurance organizations, while just two cities confirmed to implementing a media saturation strategy as part of their Vision Zero Program. Additionally, two cities cited their partnerships with other mode-specific organizations, such as certain bicycle groups and those focused on pedestrian facilities near schools.

Policy and Legislation

While efforts have been made at state and federal (or equivalent) to encourage safer driving behavior, Vision Zero also strives to incorporate specific policy changes alongside its local implementation. Many of the surveyed cities are large enough that they have their own Department of Transportation (DOT) with additional powers granted to them besides the state or federal DOT. With these governmental duties assured, policy changes are much more likely to occur with the implementation of a Vision Zero Program, with the Policy and Legislation goal being comprised of four sub-goals as response options, along with "other" listed as an option to include answers otherwise not listed. From this survey question, nearly all cities except one stated that they included legislation to discourage speeding when implementing their Vision Zero Program, although that city has introduced legislation which focuses on reducing speeds on residential streets. Eight of the ten cities included legislation on collision/ crash reporting as part of their Vision Zero Program, while only half of the cities incorporated a sustainable funding strategy as part of their legislative goals.

Inclusion of Relevant Data

As Vision Zero is fundamentally a data-driven program, the availability and quality of data is paramount to a successful implementation of the program as a whole. The Relevant Data category surveyed the peer cities regarding their current and planned use related to crash data, with this goal being comprised of three sub-goals as response options, along with "other" listed as an option to include answers otherwise not listed.

When determining data-driven priorities for Vision Zero, nearly all cities were in agreement on all three sub- goals. All ten cities confirmed that it may work better having a collision database as part of their program, and all but one city affirmed to having codified plans to use as part of their program. All but two cities stated their consideration for data-driven enforcement, though there may be instances where enforcement is already being handled by other departments/ programs. Furthermore, three cities all expressed their ongoing efforts to develop a form of HIN.

Project Management Office (PMO)

Due to the extent and complexity of a program as comprehensive as Vision Zero, most jurisdictions that decide to implement it create a discrete team/division to handle the program. These teams are typically led and/or managed by a PMO that handles all reporting related to Vision Zero status and performance metrics. Nearly all cities stated that they employ some type of PMO, with five cities having their PMO report to the Mayor's Office/City Council, Administrative Office, and other Departments. One city's PMO reports to the Mayor's Office and other Departments but not a City Administration Office, though this is likely due to differences in government style. One city only reports to the Mayor's Office, and another city's PMO reports only to their other Departments. One does not have a PMO, but states that they are still reporting to the Mayor's Office and other Departments. Another city does not have a PMO either and reports only to other departments.

Program Spending

Another vital component of a successful Vision Zero Program is adequate funding, through the construction of data-driven infrastructure to improve safety or to fund staffing for citywide education campaigns. The peer cities surveyed were each asked what their total capital expenditures were in the most recent calendar or fiscal year, along with the total capital expenditures put towards Vision Zero. Of these cities, two did not provide information on total nor Vision Zero-related capital expenditures, while one city did not provide total capital expenditures and two cities did not provide total Vision Zero capital expenditures. Of the five cities that provided both total capital expenditures and Vision Zero capital expenditures, one city had the highest percentage of expenditures related to Vision Zero at 16.5 percent. This was followed by another city with 3.5 percent, another at 2.9 percent, another at 1.9 percent, and another at 0.1 percent. While this suggests one city is the most committed to financially supporting Vision Zero, there are differences in how capital expenditures are defined between cities, therefore the results of this survey question are not entirely indicative of the total amount of money spent on Vision Zero Programs and/or projects.

Countermeasure Implementation and Effectiveness

Among the tools at a city's disposal to implement Vision Zero, infrastructure improvements are one of the most important and effective when bringing about improvements to specific intersections and/or roadways. Peer cities as well as the City of Los Angeles were asked about their implementation of a variety of countermeasures and asked to rank their effectiveness on a three-tier scale, the results of which are shown below in **Table 14**.

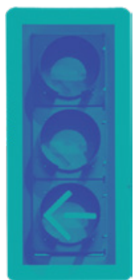
Table 14: City's View of Effectiveness of Countermeasures

Countermeasure	Number of Answers for Effective	Number of Answers for Semi-Effective	Number of Answers for Ineffective	Not Used/ No Answer Given
Crosswalk Paddle Sign	1	2	2	6
Flashing Crosswalk Beacon	2	4	0	5
High-Visibility Crosswalk	5	0	0	6
Intersection Tightening/ Painted Curb Extension	7	0	0	3
Leading Pedestrian Interval	6	0	0	2
Left Turn Upgrade	7	0	0	3
Pedestrian Hybrid Beacon	1	0	0	7
Pedestrian Refuge Island	6	2	0	3
Safer Lane Configuration (Road Diet)	8	0	0	3
Scramble-Style Crosswalk	5	1	1	3
Separated Bicycle Lane	9	0	0	2
Speed Feedback Sign	0	2	2	3

Of the twelve countermeasures, the ones most frequently implemented by the cities were: LPIs, left turn upgrades, pedestrian refuge islands, separated bicycle lanes, and speed feedback signs. The least-used countermeasure was the pedestrian hybrid beacon, utilized by only four of the peer cities. In addition to analyzing which countermeasures were implemented, their effectiveness was also ranked, though cities who did not give an answer were not included in the average scores of each countermeasure. Of the countermeasures that were given answers, the most effective countermeasures on average were high-visibility crosswalk improvements, safer lane configurations, and separated bicycle lanes. Intersection tightening improvements and left turn upgrades were also among the most-effective as ranked by the cities. Crosswalk paddle signs and speed feedback signs were ranked the least effective on average by the cities, with no cities ranking speed feedback signs as effective. Overall, separated bicycle lanes were rated as the most effective, as nine of the eleven cities rated them as effective.

MOST FREQUENTLY IMPLEMENTED COUNTERMEASURES

Leading Pedestrian Intervals (LPIs)



Left turn upgrades

Pedestrian refuge islands

Separated bicycle lanes

Speed feedback signs

Challenges and Barriers

While the peer cities surveyed have taken the important step of adopting a Vision Zero Program, all the peer cities have encountered a variety of challenges and barriers during implementation. Of the answers given, the most common challenge stated by the peer cities were elements beyond their department, such as funding and political sentiments. Even though most Vision Zero Programs originate from a city's DOT, funding can be difficult to obtain if political sentiments aren't supportive of the program or if other priorities exist within the department or local government. Lack of funding can contribute to a low amount of staffing support as well as limited resources to implement improvements, especially infrastructure-related improvements that typically cost more. Adequate staffing was a key concern for four cities, as program staff are one of the primary resources needed for effective Vision Zero implementation. Staffing is also related to another city's concerns regarding the speed of implementation, as more staff would likely assist in outreach and analysis efforts.

Concerns were also expressed related to societal changes in behavior following the Covid-19 Pandemic, where drivers seemingly adopted more aggressive driving behaviors since 2020 and combined with a perceived lack of enforcement, has resulted in significant barriers for Vision Zero. Two cities had the greatest concerns regarding these overall attitudes from drivers, where more enforcement is warranted but seemingly ineffective, as tools such as red-light and speed cameras can only reprimand those with license plates and valid registration. These cities have seen a substantial increase in the number of vehicles without proper tags, therefore the most dangerous drivers are unaffected by automated enforcement, as the ticket never reaches them.

These challenges have resulted in several key priorities for the peer cities, mostly focused on constructing a unified set of standards and goals to present to city councils/departments to accomplish their Vision Zero ambitions.

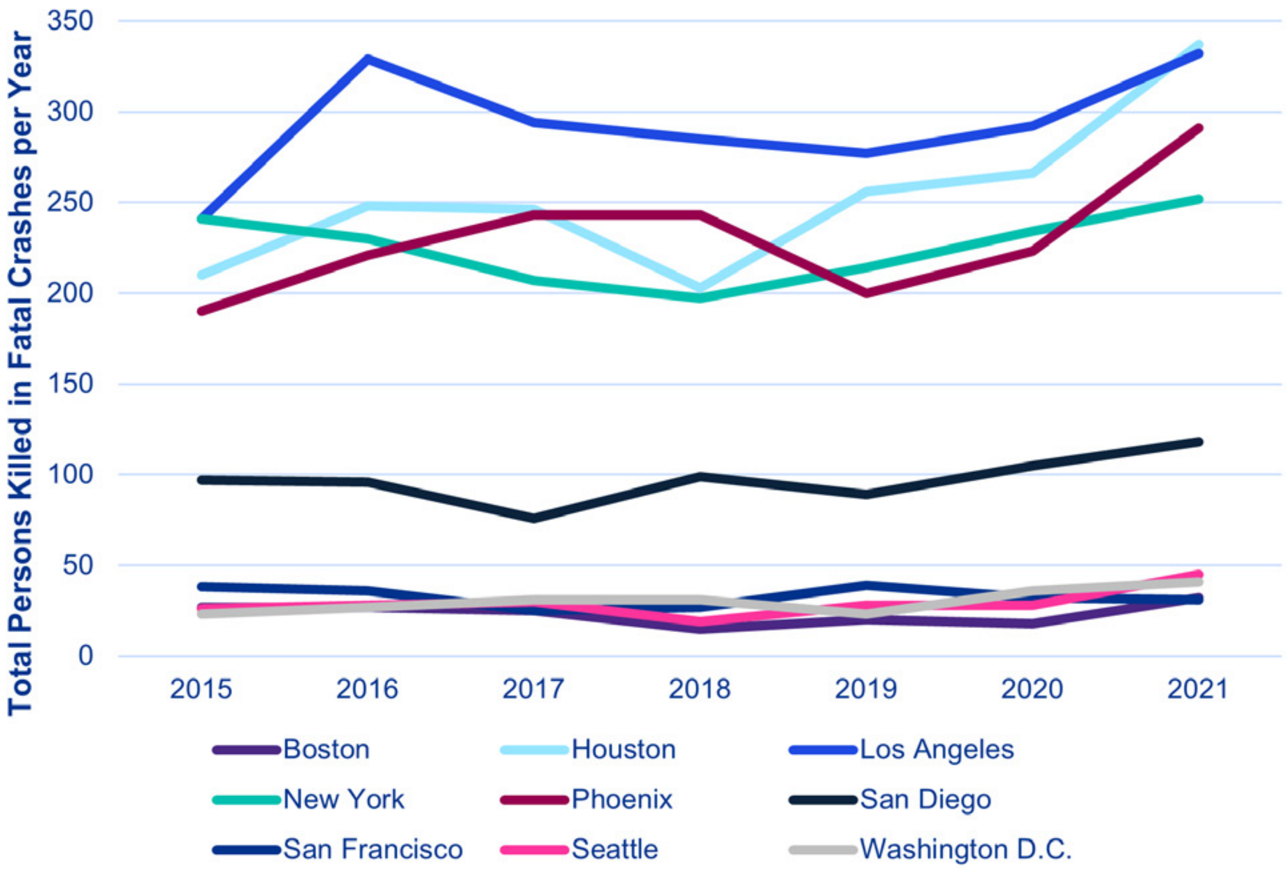
Nearly all cities stated that they plan to consolidate their safety objectives and develop standards for infrastructure replacements and safety projects. Furthermore, to accomplish these goals, nearly all cities are currently focused on boosting their staffing levels to handle the extra work needed to implement their solutions. One of the solutions several of these cities cited is the creation and/or strengthening of a HIN. By prioritizing infrastructure improvements in the areas with the most frequent number of crashes, and applying these standards citywide, these cities expect to have greater success in reducing fatalities and serious injuries moving forward.

Program Results

The majority of peer cities have encountered significant changes in driving behavior and funding/resources over the past few years, resulting in most of the cities encountering increases in fatalities and serious injuries. Of those surveyed, half the cities reported that fatalities have been increasing, with three of the cities reporting decreases in fatalities. However, as of 2021 only one of the U.S. peer cities experienced a decrease in fatalities in the past three years, with the overall trend in fatalities increasing for most cities as shown in **Figure 25**.

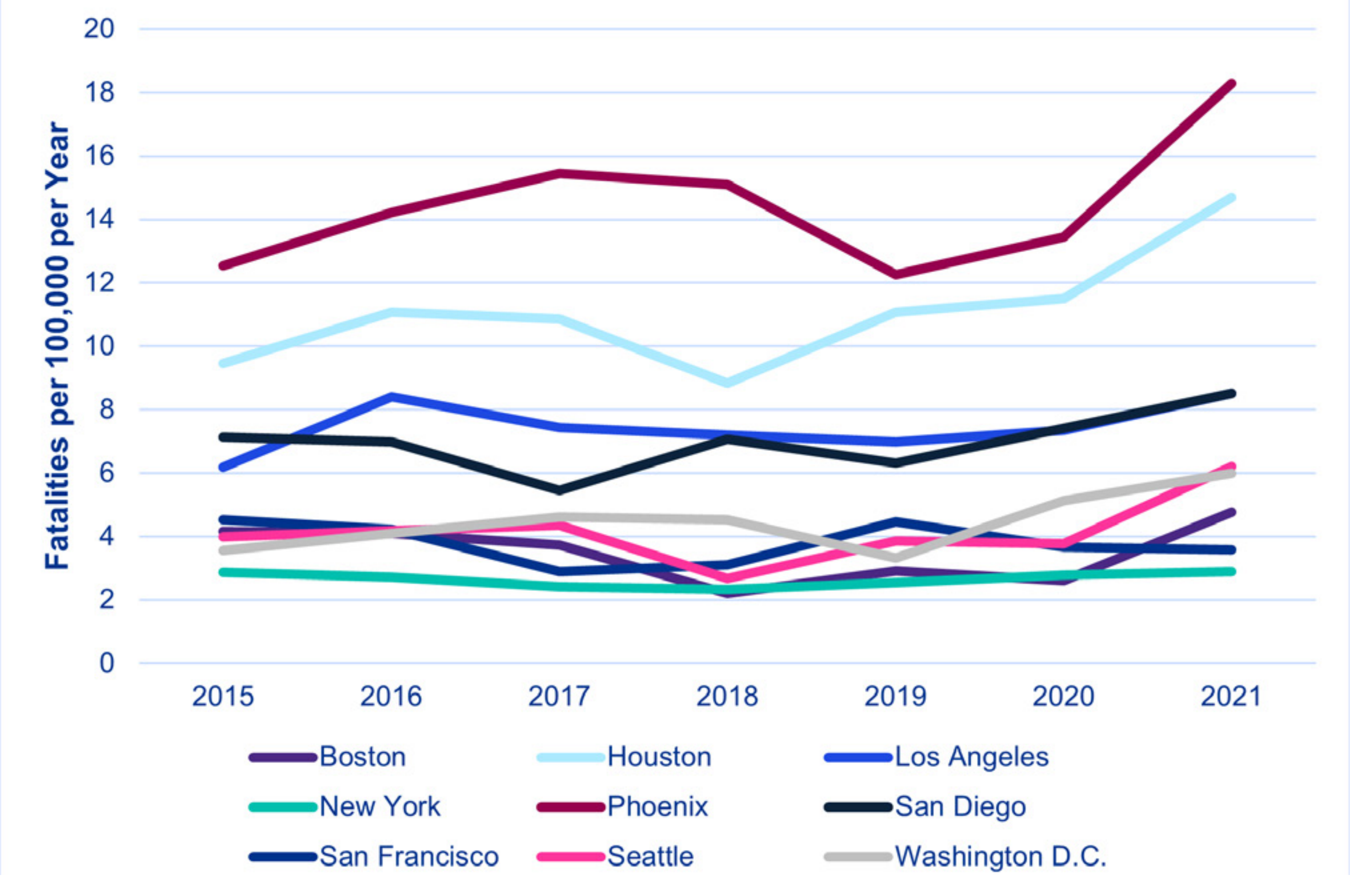
The majority of peer cities have encountered significant changes in driving behavior and funding/resources over the past few years, resulting in most of the cities encountering increases in fatalities and serious injuries. Of those surveyed, half the cities reported that fatalities have been increasing, with three of the cities reporting decreases in fatalities. However, as of 2021 only one of the U.S. peer cities experienced a decrease in fatalities in the past three years, with the overall trend in fatalities increasing for most cities as shown in **Figure 26**.

Figure 25: Total Persons Killed in Fatal Crashes 2015-2021



Source: NHTSA FARS

Figure 26: Persons Killed in Fatal Crashes per Year per 100,000 People

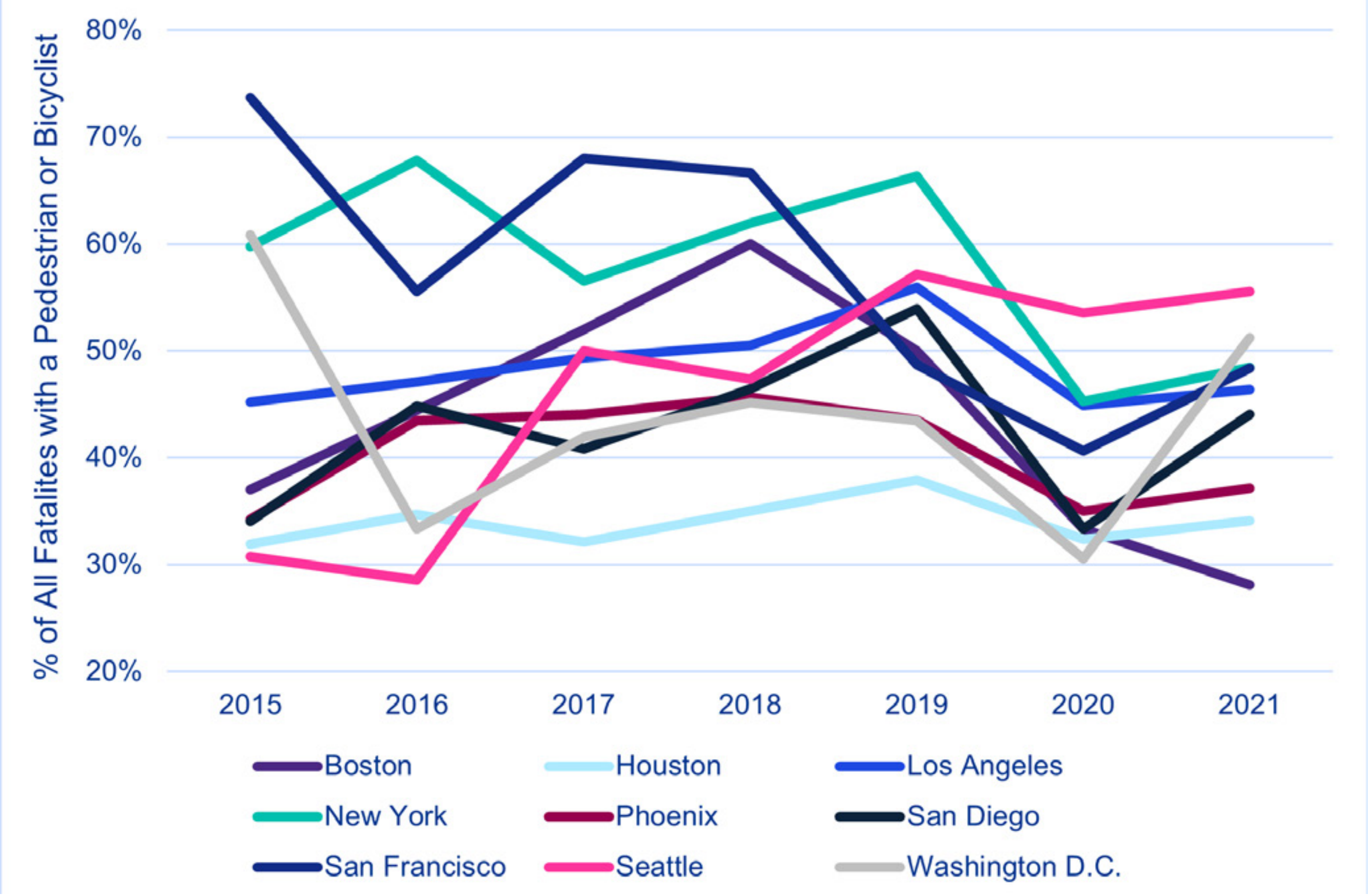


Sources: NHTSA FARS, ACS 5-Year Estimates

When controlling for population, the trend of increasing fatalities remains present for nearly all U.S. cities from 2019-2021. Phoenix consistently had the highest fatality rate, peaking in 2017 with a rate of 15.43 per 100,000 people before decreasing to a seven-year low of 12.25 in 2019, followed by an increase to a high of 18.29 in 2021. Houston followed a similar trend, peaking in 2016 with a fatality rate of 11.07 per 100,000 people, followed by decreasing to a low of 8.84 in 2018, followed by a sharp increase to a high of 14.70 in 2021. The fatality rate of Los Angeles was fairly consistent, peaking in 2016 with a fatality rate of 8.40 per 100,000 people, followed by a gradual decrease to a low of 6.98 in 2019, with an increase to a seven-year high of 8.51 in 2021. From 2015-2021, New York City consistently had the lowest fatality rate per year, with the highest rate occurring in 2021 at 2.99 fatalities per 100 thousand people.

Conversely, when examining the percentage of fatalities per city that resulted in the death of a bicyclist or pedestrian, the proportions between cities and within the last several years varies widely compared to the total number of fatalities, as shown in **Figure 27**.

Figure 27: Percent of Total Fatalities per Year Involving a Pedestrian or Bicyclist



Source: NHTSA FARS

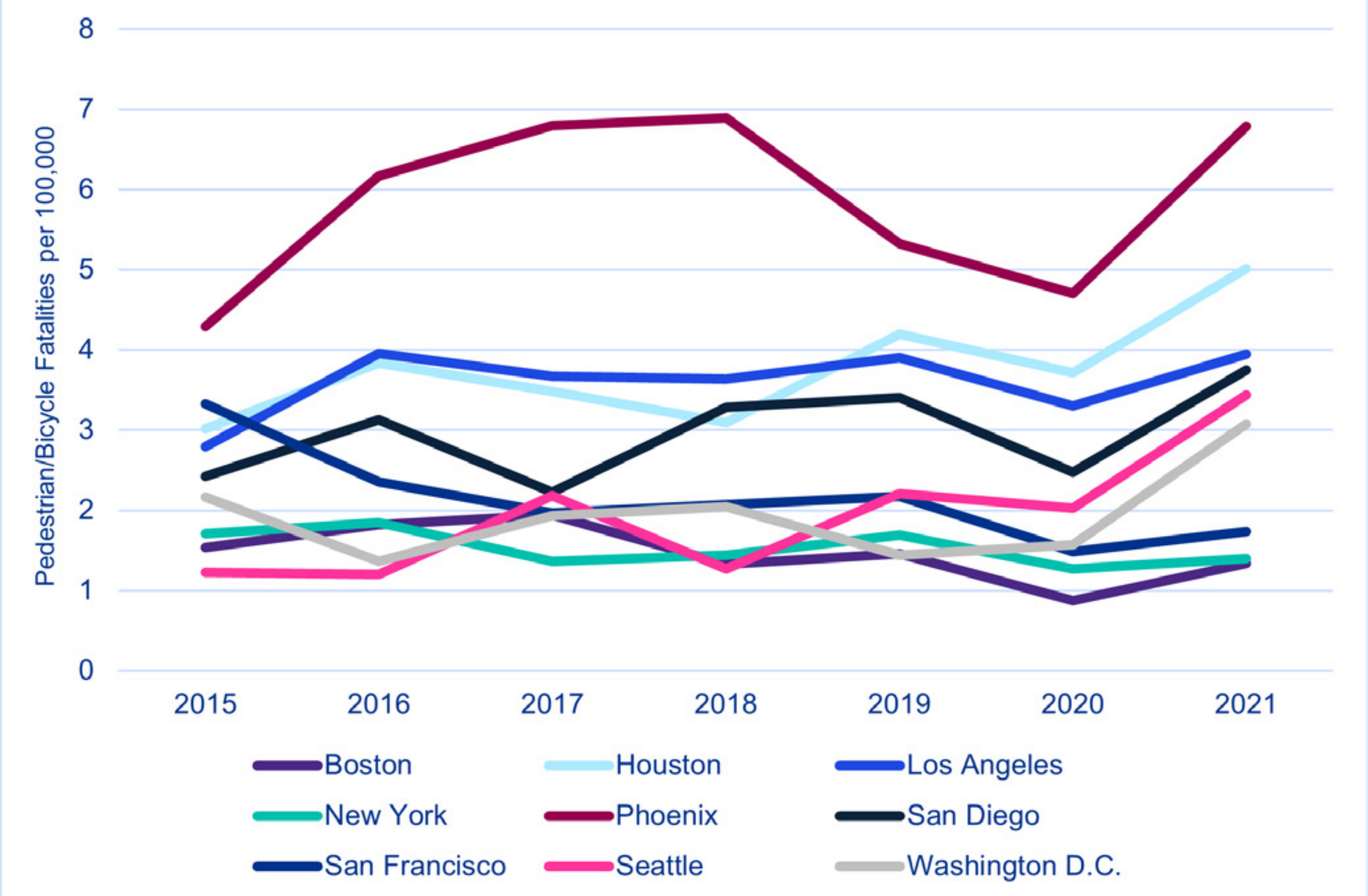
When examining the number of fatalities per year that are classified as pedestrians or bicyclists compared to the total number of fatalities, the proportions and trends vary widely. One of the starkest differences between the proportion of fatalities classified as bicycles/pedestrians and the total number of fatalities is that while the total number of fatalities generally increased from 2019 to 2020, the percentage of fatalities that involved bicycles or pedestrians sharply declined for all U.S. peer cities from 2019 to 2020. This was likely due to the Covid-19 Pandemic causing most pedestrians and non-motorized users staying at home, and with many connecting modes of transit and businesses closed, most people who were traveling did so via personal vehicles.

However, prior to the Pandemic, the proportion of fatalities involving pedestrians or bicyclists in Los Angeles had been steadily increasing, rising from 45.2% in 2015 to a high of 56.0% in 2019. Furthermore, despite having one of the lowest fatality rates per 100,000 people, both New York City and San Francisco consistently had one of the highest proportion of fatalities involving a pedestrian or bicyclist.

The decrease in pedestrian and bicyclist fatalities is also prevalent when controlling for population, as shown in **Figure 28**.

The fatality rate for pedestrians/bicyclists increased for most of the U.S. peer cities overall from 2015 to 2021, with most cities having their lowest rates in 2020 followed by their highest rates in 2021. Phoenix consistently had the highest rate of pedestrian/bicycle fatalities per 100,000 people, going from 4.29 in 2015 to 6.89 in 2018, followed by a sharp decrease to 4.70 in 2020 and sharp increase to 6.79 in 2021. Houston aligned mostly with Los Angeles with the pedestrian/bicyclist fatality rate, increasing from 3.02 per 100,000 people in 2015 to a seven-year high of 5.01 in 2021.

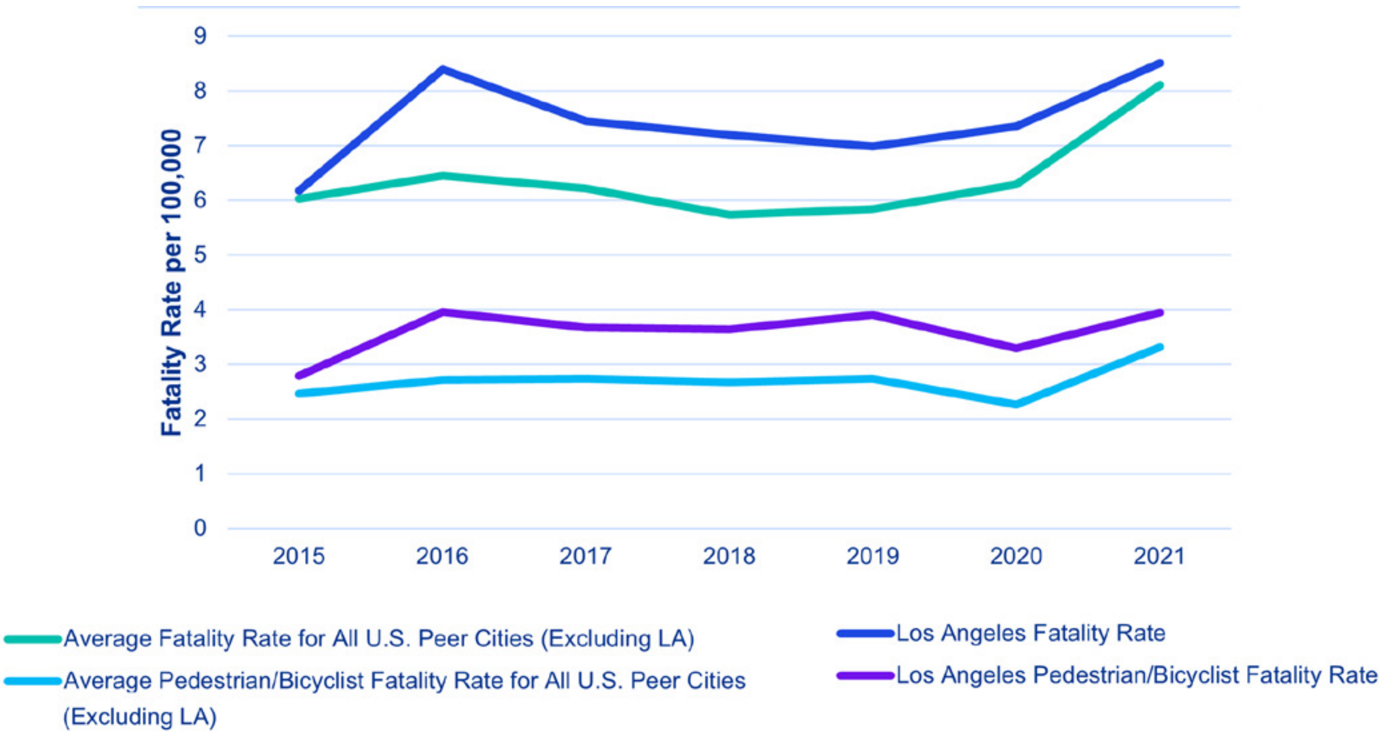
Figure 28: Pedestrian or Bicyclist Fatalities per 100,000 People



Sources: NHTSA FARS, ACS 5-Year Estimates

As shown by the previous figures, Los Angeles is not an outlier when considering the trends of fatalities over the past several years, though the city has been consistently above-average as shown in **Figure 29**.

Figure 29: Average U.S. Peer City Fatality Rates vs Los Angeles Fatality Rates



Sources: NHTSA FARS, ACS 5-Year Estimates

Overall, the City of Los Angeles follows the average trend for both total fatality rate and pedestrian/bicyclist fatality rate, with the gap staying fairly consistent between the city and the overall averages. However, the city is consistently above both average fatality rates, with the peak gap occurring in 2016 for both total fatality rate and pedestrian/bicyclist fatality rate. The Los Angeles total fatality rate was 1.95 points higher in 2016 than the U.S. peer city average, while the pedestrian/bicycle fatality rate for the city was 1.24 points higher than the U.S. peer city average in 2016. The gap between Los Angeles and the peer city average was lowest for both total fatality rate and pedestrian/bicyclist fatality rate in 2015, the city being 0.15 points higher for total fatality rate and 0.33 points higher for pedestrian/bicyclist fatality rate.

Conclusion

CAO wanted to investigate what Los Angeles can learn from its peers; which features are most effective for different locations; and what are some tangible examples of success and areas for improvement. Vision Zero is a universal standard to which cities and related departments can subscribe to in the name of improving safety for all road users. While the peer cities surveyed differ in geography, population, and funding, they all share the same goal of reducing fatalities and serious injuries through the systematic and data-driven approach of Vision Zero. All the cities have or plan to have robust databases in which to track crashes and Vision Zero-related projects, along with the majority of cities developing a HIN to prioritize infrastructure improvements where they're needed most.

Furthermore, nearly all the cities recognize the value of partnering with different community and government groups to achieve their goals, not only as part of garnering political support to assist with funding and staffing, but to further increase the effectiveness of education campaigns and spread awareness. These cities serve as valuable benchmarks to which other cities can compare to, allowing all cities participating in Vision Zero to adapt and succeed together as they learn from one another. The benchmarking activity concerns seeking "leading practices" of up to twelve cities where similar traffic and urbanization areas can be found.

7 LIST OF ABBREVIATIONS

LIST OF ABBREVIATIONS

Active Transportation Program (ATP)
Bike Lane Acceleration and Safety Team (BLAST)
Bureau of Engineering (BOE)
Bureau of Contract Administration (BCA)
Bureau of Street Lighting (BSL)
Bureau of Street Services (BSS)
California Highway Patrol (CHP)
Department of City Planning (DCP)
Department of Aging (DOA)
Department of Disability (DOD)
Department of Neighborhood Empowerment (DONE)
Direct Vision Standard (DVS)
Driving Under the Influence (DUI)
California Office of Traffic Safety (OTS)
California Environmental Quality Act (CEQA)
Community Online Reporting Service (CORS)
Office of the City Administrative Officer (CAO)
Department of Transportation (DOT)
Federal Highway Administration (FHWA)
Full-time Employees (FTEs)
Geographic Information Systems (GIS)
High Injury Network (HIN)
Highway Performance Monitoring System (HPMS)
Highway Safety Improvement Program (HSIP)
Key Performance Indicators (KPIs)
Killed or Seriously Injured (KSI)
Leading Pedestrian Intervals (LPI)
Level of Service (LOS)
Los Angeles County Department of Public Health (LACDPH)
Los Angeles County Metropolitan Transportation Authority (LA Metro)
Los Angeles Department of Water and Power (LADWP)
Los Angeles Police Department (LAPD)
Los Angeles Department of Transportation (LADOT)
Los Angeles Fire Department (LAFD)
Los Angeles School Police Department (LASP)
Los Angeles Unified School District (LAUSD)
Municipal Improvement Corporation of Los Angeles (MICLA)
National Association of City Transportation Officials (NACTO)
National Highway Traffic Safety Administration (NHTSA)
Manual on Uniform Traffic Control Devices (MUTCD)
Program Management Office (PMO)
Safe Streets for All (SS4A)
Safe Transportation Research and Education Center (SafeTREC)
Safety Performance Functions (SPFs).
Statewide Integrated Traffic Records System (SWITRS)
Sports Utility Vehicle (SUV)
Transportation Injury Mapping System (TIMS)
Vehicle Miles Traveled (VMT)

8 APPENDICES

APPENDIX A: SUMMARY OF FINDING AND IMPROVEMENT OPPORTUNITIES

#	Finding	Improvement Opportunity
1	The HIN and ad-hoc safety studies are used to identify the city's priority corridors, but the outcomes were not integrated into a comprehensive framework to inform decision-making, impacting the timely implementation of Vision Zero Program actions and strategies.	**1.1** Develop stratified HIN sets: Create subsets within the HIN that focus on specific crash characteristics such as crash geometry, involvement of vulnerable road users, or roadway conditions, in addition to fatal and serious injury crashes. In addition to the benefits for planning more targeted treatments, this will enable the LAPD to prioritize resources to areas where specific crash types are more prevalent. By targeting these areas, Phase 2 and 3 improvements can be implemented where they are needed most. Phase 1 improvements should be implemented proactively where appropriate citywide based on observed characteristics associated with crashes rather than focusing on existing hot spots. Update the HIN at regular intervals to capture changes in crash patterns due to the impact of improvements and land uses. **1.2** LADOT or the office responsible for managing the program in the future should create a robust database and associated frameworks to enable performance measurement and continuous improvement, including before-and-after assessments conducted at least a year after the improvement becomes active. This will also enhance transparency between the program implementation teams, the CAO, and Mayor's Office in the context of program's performance, interagency and external coordination support, decision-making, and alignment with other relevant projects. **1.3** Develop locally calibrated Safety Performance Functions (SPFs). SPFs provide an expected number of crashes that a given facility could experience based on the performance of similar facilities in the City. Once calibrated locally, SPFs allow for predictive crash analysis that is not dependent on actual crash data and avoid the variations seen every year by traditional black spot analysis. These will use the broader safety trends in the City of Los Angeles to help estimate future risk associated with roadway types, and the likely safety outcomes of future roadway projects that will change roadway configurations. These predictive measures will help the city become more proactive in safety project implementation. **1.4** Leverage newer technologies that allow enhanced data collection such as near-miss detection at intersections, big data sources that measure multimodal traffic activity, and other similar data that refine risk assessments and can help prioritize Phase 3 and other larger investments.

#	Finding	Improvement Opportunity
2	Inefficiencies in LAPD crash data collection and reporting processes are limiting the program's ability to plan and implement the Vision Zero strategies. These include, but are not limited to, the lack of an electronic reporting system for crashes, and citations, and the lack of collection of all different types of crashes.	**2.1** Digitize and maintain digital records of crash incidents. This involves converting existing crash records into a digital format and storing them in a centralized database. By doing so, these records become easily accessible and can be efficiently managed, eliminating the need for cumbersome paper-based systems: • Another crucial aspect is the organization of the digital records within the database. It is essential to structure the data in a manner that allows for efficient querying. By organizing the records based on relevant crash attributes such as date, time, location, and vehicle type, authorized users can easily retrieve specific information without requiring significant effort from LAPD staff. This streamlined database querying process enables users to access the data they need promptly and accurately. • To further enhance accessibility and ease of data sharing, the development of a user-friendly portal for authorized users is recommended. This portal would provide direct access to crash records that are not personally identifiable. By utilizing the portal, authorized users can retrieve the necessary information independently, without relying on direct intervention from LAPD staff. This not only saves time and resources but also streamlines the overall data-sharing process, promoting efficient collaboration and information exchange. **2.2** Analyze crash data to identify specific trends, such as concentrations of young driver-related crashes, unlicensed driver crashes, or senior driver crashes. By recognizing these patterns, the LAPD can develop targeted safety enforcement campaigns and initiatives that address the factors contributing to elevated crash rates. This approach aims to improve safety, preserve independence, and reduce the occurrence of crashes associated with specific risk factors. **2.3** Crash data collected and stored by LAPD should be supportive of guidelines set by the NHTSA Traffic Records Program Assessment Advisory, 2018 Edition (Report No. DOT HS 812 601).
3	There are no program policies, procedures, and governance frameworks to guide program staff and other involved parties on Vision Zero Program planning, implementation, and controls.	**3.1** Establish a centralized function or unit responsible for planning and delivering the Vision Zero Program utilizing existing program resources. A dedicated program management unit can provide the necessary structure, expertise, and oversight to ensure effective project management, monitor progress, and coordinate efforts across departments and agencies. **3.2** Under this centralized function, establish program elements such as: • Develop policies and procedures that set up detailed charter of roles/responsibilities for all critical entities (LAPD, LADOT, BSS, BOE, and Mayor's Office) and accountability mechanism for those roles. One example is an overall governance framework documentation structure. Consider the option of injecting Vision Zero Program objectives, goals, actions, and strategies into existing department/ bureau governance if viable. • Define a clear role for the LAPD that includes routine coordination with the Vision Zero team, a system and mandate for data sharing, and corresponding allocation of Vision Zero resources. **3.3** Re-establish Steering Committee and Task Force structure, with documented clear roles and responsibilities for each, along with appropriate cadence of meetings (e.g., every six months or two months). Provide tools for Vision Zero to benefit from a real capital program and advanced planning for projects. Membership in these bodies needs to recognize the key stakeholders—Mayor's Office, LADOT, LAPD, BOE, and BSS. This centralized function should also develop a decision-making process that facilitates prioritization and collaboration with stakeholder groups.

#	Finding	Improvement Opportunity
4	While some major actions and strategies from the 2017 Vision Zero Action Plan were implemented, many others were not.	**4.1** At a high level, the program ought to be reframed on a more realistic basis with a longer timeframe and/or trend goal. The 2015 and 2017 goals were overly ambitious and not attained. Consider the programs of leading peers from the benchmarking survey, such as New York and London. The program goals could also include a metric for potential lives saved and serious injuries prevented based on the countermeasures implemented and their associated crash modification factors. **4.2** Update the Action Plan for 2024 and reassess program strategy and goals that account for amount of time needed to identify and initiate actions. Key considerations include (but are not limited to): • Successful program governance • Tailoring strategies to target populations (e.g., tiered HINs, pedestrians, cyclists, elderly) • Leveraging technology and accounting for related risks and opportunities (e.g., define a mitigation strategy for the impact of autonomous vehicles e-bikes and scooters) • Leveraging federal and state funding (e.g., SS4A, HSIP, and other grants that can be applied to safety) • Using the Safe System Approach to create and promote a culture of safety while also reducing the impact of human error. **4.3** The program management team should establish a coalition of leaders across departments (e.g., Task Force) and allocate sufficient resources and develop an annual performance measurement and monitoring plan with targets for how many safety improvements were evaluated and whether investments have been worthwhile from a cost and benefit standpoint, to better inform program planning and future budget requests. They should also establish a risk management plan that addresses what proactive and mitigation strategies can be employed to achieve the Vision Zero goals and objectives.
5	The Vision Zero Program has delivered many safety treatments to date, but lacks a systemic planning element to support budgeting, project development, and a long-term roadmap to zero traffic deaths.	**5.1** Develop a comprehensive master plan that balances short-term actions with a 5-, 10-, or 15-year look- ahead design and construction plans based on proactive project identification and realistic funding estimates. To enhance the implementation process, LADOT could take a more proactive approach by identifying projects earlier and establishing realistic timelines. **5.2** Budget process should be informed by the program progress and future planning. Tracking of existing expenditures and cost per project for each phase can be aligned with available staff and equipment resources to help budget for what can be accomplished each year. The program should include financial practices that are transparent and accountable to promote fair resource allocation. The structured and trackable costs of Phase 2 projects are a good template for financial management and evaluation. **5.3** Develop specific individual plans for all the arterial corridors within the HIN, considering all critical aspects of safety improvement. Explore how BOE could potentially support or lead aspects of this. Verify existing conditions before the design phase to ensure accurate information and successful project execution. **5.4** Consider using private contractors to advance safety improvement projects. This can provide many benefits, including specialized expertise, enhanced efficiency, greater accountability, flexibility, and reduced liability. Equally important, this is a good option in times of understaffing, which has affected the Los Angeles Vision Zero Program in prior years.

#	Finding	Improvement Opportunity
6	The 2017 Vision Zero Action Plan outlined four components to reach the Vision Zero goal: engineering (innovative street design), education, enforcement, and evaluation. However, the program has become overly engineering-focused with very-limited-to-no education, enforcement, or evaluation activities.	**6.1** Create safety emphasis areas that identify the behaviors, roadway characteristics, and travel patterns most associated with fatal and serious injury crashes, and use it to align education, enforcement, and engineering activities to prioritize reducing the risk of death or injury. **6.2** Develop an education and awareness campaign that is partnered with targeted enforcement activity that creates a citywide brand for Vision Zero. Peer cities such as New York have had success in increasing project/treatment acceptance and combatting behavioral issues. For the campaign to be effective, social media should be harnessed for both community engagement and education campaigns through the purchase of ads and other strategies as a cost-effective way to reach the broader public and to keep momentum on community engagement activities.
7	Vision Zero has not been embedded in other department mandates, including those led by other city departments/bureaus (e.g., BSS and BOE), creating an ad-hoc approach to implementation of safety improvements.	**7.1** Use former Complete Streets implementation framework as a template for interdepartmental coordination for the identification, prioritization, and implementation of large and multifaceted Phase 3 improvements. **7.2** Coordinate Vision Zero Program priorities and systemic initiatives with BSS, particularly in resurfacing and restriping efforts. This could accelerate implementation of systemic improvements by incorporating safety upgrades, such as improved crosswalk striping, in alignment with Vision Zero objectives. Assure all relevant asset management plans for street infrastructure are supportive of Vision Zero and vice versa. **7.3** Consider housing long-range Vision Zero project development under BOE, which seems to have the necessary resources and expertise to facilitate more strategic planning and coordination, especially for Phase 3 projects. Towards that end, increase BOE Vision Zero funding and involvement.
8	The current Street Design Manual is over 50 years old (1970) and is not set up to prioritize Vision Zero Program Implementation.	**8.1** Update the Street Design Manual and synthesize guidance for all related design and guidance documentation—including street standards and street classifications, per latest safety design guidance. Update roadway maintenance and construction procedures accordingly. **8.2** Because it is the document used to determine project type and location, improve the Safety Toolkit by including detailed design requirements for each improvement type.

#	Finding	Improvement Opportunity
9	Vision Zero Program progress and delivery of City of Los Angeles actions are not monitored to understand how well they are doing to achieve their goals. This has resulted in a lack of program visibility and transparency.	**9.1** As part of overall policy and procedure development efforts, LADOT should clearly define its internal and external reporting process and communication strategy (i.e., beyond the current Annual Reports to Council). **9.2** Develop a balanced scorecard that assigns annual targets to the key partners of the Vizion Zero Program. Build an incentive mechanism into the scorecard to help encourage team commitment, improve overall project performance, reward and recognize success, foster collaboration, and increase accountability. The scorecard is a strategic planning and performance management tool that encourages teams to work towards common performance goals and can lead to better outcomes, project delivery, and stakeholder satisfaction. This can be achieved by including LAPD traffic safety actions to the leadership performance review process.
10	The Vision Zero Program has made efforts to embed equity in project selection and implementation, addressing previous investment disparities and promoting a more equitable distribution of resources. However, there is no systematic and holistic approach to planning and implementation of Vision Zero safety improvements in historically underinvested neighborhoods and for vulnerable road users.	**10.1** Update the HIN and priority corridor selection methodology to explicitly focus prioritization of disadvantaged communities and opportunity areas. As part of the public outreach process, involve community members in the priority corridor selection process. **10.2** Integrate diverse perspectives and explore holistic approaches to unlock city planning-level solutions that are community focused and take a collaborative approach to corridor visioning and project development. **10.3** Provide special attention to projects that impact vulnerable road users, including pedestrians, motorcyclists, the unhoused, and construction workers who are more likely to be on the street exposed to vehicular traffic.
11	The current regulatory environment limits the City of Los Angeles' ability to accomplish the Vision Zero Program goals (e.g., red light enforcement, automated speed enforcement), but opportunities for improvement are on the horizon.	**11.1** Support statewide actions of Vision Zero-aiding legislation such as automated speed enforcement, for example, implementation of AB 645 implementation. The City of Los Angeles should prepare implementation strategies in expectation of eventual passage with the proposed opt-in provision and proof of concept and talk to peers about their experience. **11.2** Support the eventual use of automated red-light cameras. Studies have shown the automated enforcement reduces fatalities where used. If there is opposition to increasing their use, then consider a modified version of red-light enforcement that treats an automated infraction similar to a parking ticket instead of a traffic infraction. This change would reduce the burden on the legal system and law enforcement resources and can also help foster a more positive relationship between law enforcement and the community, as the public may perceive the enforcement of red-light violations as less punitive and confrontational. As a follow-up action, consider developing a policy for automated red-light enforcement to target intersections in a reduced geography, such as along the HIN, and sensitive land uses, such as schools. **11.3** Explore adoption of new legislation that would target some of the new vehicle technology revolution with respect to quiet Electric Vehicles (autos, trucks, buses), autonomous/driverless vehicles, and direct vision standards. Set in motion a research program(s), potentially state funded.

#	Finding	Improvement Opportunity
12	Insufficient support from the Mayor's Office and City Council Districts has at times limited the effectiveness of Vision Zero Program delivery.	**12.1** Establish a clear and ongoing mandate from the Mayor's Office. The mandate would include regular outreach to the City Council and to key departments (LADOT, LAPD, and Public Works) to enable alignment with goals and expectations. Work towards creating a fully integrated culture of prioritizing traffic safety throughout all departments and operations. Establish one or more political champions for Vision Zero in the Mayor's Office. **12.2** Set up oversight processes at the Mayor's Office such as: • Reinforce the importance of a centralized program management unit (if approved) through political leadership • Prioritize implementation of Vision Zero Program (prioritizing safety improvements, supporting development of new policies, law enforcement, and aligning resources) • Develop a stakeholder engagement strategy with collective efforts from Mayor's Office, City Council, and the city departments • Provide leadership and guidance for creating a safety culture and Vision Zero principles in government, industry, and communities • Provide political support: The City Council or Mayor's Office can provide political support for the project by engaging with the community and stakeholders to build support and understanding for the project's importance. Political support from local officials can create the necessary momentum for successful project delivery. **12.3** Involve local businesses and residents in the public outreach process. By incorporating their perspectives and incorporating their feedback into project planning, Vision Zero Program leadership can ensure that their concerns are addressed and that the proposed improvements align with the community's needs and aspirations to the extent possible.
13	LAPD participation in the Vision Zero Program has diminished over time, negatively impacting program goals.	**13.1** The City of Los Angeles should clarify the role of LAPD in the Vision Zero Program through a new chartering process (e.g. roles/responsibilities setting workshop). Lasting engagement and partnership strategies ought to be developed, including enhancement of collaboration efforts (e.g., injury and near-miss data sharing, HIN/priority corridor updates, and joint education campaigns) between LAPD and LADOT. Examples of target behaviors for enforcement include reckless driving, driving under the influence, speeding, and mobile phone use while driving. **13.2** Consistent with role clarification, the resources devoted to traffic safety enforcement are a priority. The specific level ought to increase significantly from the current $1.5 million per year, proportional to the impact on deterring risky driving behaviors and preserving human loss of life and injury.

APPENDIX B: VISION ZERO BENCHMARKING SURVEY

SURVEY QUESTIONS

A. General

1. What's the name of your city? ____

2. What year did your program start? ____

3. What prompted the city to take on this vision zero initiative? ______________________
____

4. What year did you publish an action plan? Have you updated your action plan since the first one has established?

Established in (____________)

❍ Yes, updated in (__________)   ❍ No

5. What timeline has been set for reaching zero?

❍ By 2030 or sooner   ❍ Between 2030 and 2050   ❍ After 2050

B. Program Strategy and Delivery

6. What are the strategic goals of your program? (Check all that apply)

❍ Create safe streets for all:

(__) Complete street improvements
(__) Pavement preservation
(__) Speed surveys
(__) Temporary street closures
(__) Bicycle network
(__) Traffic signs
(__) Traffic signals
(__) High-visibility crosswalks around schools
(__) Speed mitigation around schools
(__) Safe routes for seniors
(__) Safe access to play
(__) City design standards update
(__) Other (____)

❍ Develop a culture of safety:

(__) Vision Zero education campaign
(__) Community partnerships
(__) Maximum media saturation for
(__) Vision Zero Partnering with
government organizations
(__) Partnering with insurance organizations
(__) Education on impaired driving
(__) Community building
(__) Partnering with technology partners
(__) Partnering with trauma centers
(__) Other (____)

❍ Adopt policy and legislation:

(__) Legislation to discourage speeding
(__) Collision reporting
(__) Traffic law compliance
(__) Sustainable funding strategy
(__) Other (____)

7. What are the major components of your program? What's the weighting of your focus on each component since the program has started?

Engineering: (%_________)

Enforcement: (%________)

Education: (%_________)

Other: (______________) (%___________________)

8. How does VZ as a priority stack with other City/Mayoral priorities? (Rank 1 to x)

(__) Ending homelessness
(__) Housing for all
(__) Healthcare for all
(__) Ending traffic fatalities
(__) Addressing other public safety issues
(__) Infrastructure resilience
Others:
(__) __________________
(__)___________________

9. How does your program balance broadly implement lower cost projects vs. large transformative projects at specific locations? (Check all that apply)

❍ Focused on delivering fewer, large-scale investments (i.e., prioritizing high crash locations/HIN)
❍ Focused on broadly delivering more, low-cost investments
❍ Relatively equal balance of both

10. Do you have a Project Management Office (PMO) for reporting on the performance and status of the program?

❍ Yes (Check all that apply)
(__) Reporting to Mayor's Office or Council
(__) Reporting to Office of the City Administrative Officer
(__) Reporting to Department Level

❍ No (Check all that apply)
(__) Reporting to Mayor's Office or Council
(__) Reporting responsibilities split across departments

11. Does your Vision Zero Program include coordination with police and public health departments? Is there program oversight that includes those agencies as well?

(__) Public Works Focus
(__) Multi-Agency, but each administers its components separately
(__) Multi-Agency with consolidated Vision Zero Oversight
(__) Other

12. What was your city's total spending on capital program in last fiscal or calendar year? How much of it is spent on vision zero projects?

Capital Program Expenditures ($M) /Annual
($__________)

Vision Zero Expenditures ($M) /Annual
($__________)

13. What's the approximate average number of full-time equivalent (FTE) employee that are assigned to the program annually?

Capital Program FTE/Annual (__________)

Vision Zero FTE/Annual (__________)

14. What are the other safety-related programs that you implemented complementary to the Vision Zero Program? ____

15. Regarding program design and delivery, please indicate which stakeholder group (s) are responsible (Enter for all stages).

Advanced Planning:

(____)

Funding/Grants:

(____)

Planning:

(____)

Design:

(____)

Construction:

(____)

16. Which statements best describe how your city is investing in Vision Zero and the results being realized from those investments?

Degree of investment / improvements:

❍ Aggressive ❍ Moderate (e.g., key components) ❍ Limited

Results of investment / improvements:

❍ Strong

❍ Moderate

❍ Limited

❍ Not known

17. Allocation of resources – Which statements are true for how your resources are assigned (Check all that apply)?

❍ We utilize target metrics to determine the number of program personnel staffing levels we need for a given year

❍ The number of program personnel is determined by the annual capital budget for projects and resources

❍ We have designated program personnel that are assigned to projects on an as needed basis based on project type, size, etc.

❍ We hire contracted resources to support projects and provide program oversight and management support

18. What areas of program implementation are currently challenges/barriers and priorities for improvement?

Challenges and Barriers: ____

Priorities: ____

19. What are the different types of enforcement implemented in your city (Check all that apply)?

Automatic speed enforcement:

❍ Y ❍ N ❍ Planned

How did this solution help reduce the number of incidents?

(____)

Red light enforcement:

❍ Y ❍ N

❍ PlannedHow did this solution help reduce the number of incidents?

(____)

Non-armed enforcement:

❍ Y ❍ N ❍ Planned

How did this solution help reduce the number of incidents?

(____)

Impaired Driver Roadblocks:

❍ Y ❍ N ❍ Planned

How did this solution help reduce the number of incidents?

(____)

Seatbelt Checks:

❍ Y ❍ N ❍ Planned

How did this solution help reduce the number of incidents?

(____)

Other solution:

(____)

How did this solution help reduce the number of incidents?

(____)

C. Program Performance

20. Which statement best describes your approach to measurement of vision zero program performance?

Approach to conducting systematic reviews / assessments	Program Team	Internal Audit	Outside or Independent Group
No plan	N/A	N/A	N/A
Ad-hoc basis or as needed basis	❍	❍	❍
Regularly (e.g., quarterly, and annually)	❍	❍	❍

21. What are the key performance indicators you monitor and track? (i.e., number of improvements)

Engineering:

KPIs (____)

Education:

KPIs (____)

Enforcement:

KPIs (____)

Other KPIs (____)

22. Do you perform benefit-cost assessments for individual traffic safety solutions?

❍ Yes ❍ No ❍ Qualitative only

23. What are the tangible examples of success? (Quantify why considered a success if possible. Fill in the columns that apply.)

Uses of Data: ________________________________

New Regulations: ________________________________

Traffic Safety Solutions: __________________________

Education: ______________________________________

Enforcement Strategies: __________________________

24. What's the level of effectiveness of implementation of different improvements?

Improvements	High Visibility	Safer Lane Configurations	Speed Feedback Signs	Intersection Tightenings / Painted Curb Extensions	Crosswalk Paddle Signs	Ped Refuge Islands	Leading Pedestrian Intervals
Effective	❍	❍	❍	❍	❍	❍	❍
Semi-effective	❍	❍	❍	❍	❍	❍	❍
Not effective	❍	❍	❍	❍	❍	❍	❍

Improvements	Flashing Crosswalk Beacon	Ped Hybrid Beacons	Scramble Crosswalks	Left Turn Upgrades	Separated Bicycle Lanes	Others (____________)
Effective	❍	❍	❍	❍	❍	❍
Semi-effective	❍	❍	❍	❍	❍	❍
Not effective	❍	❍	❍	❍	❍	❍

25. Are you meeting your fatal reduction targets towards reaching zero?

❍ Yes
❍ No, but fatalities are going down
❍ No and fatalities are increasing
❍ We have not set targets, but fatalities are going down
❍ We have not set targets and fatalities are increasing

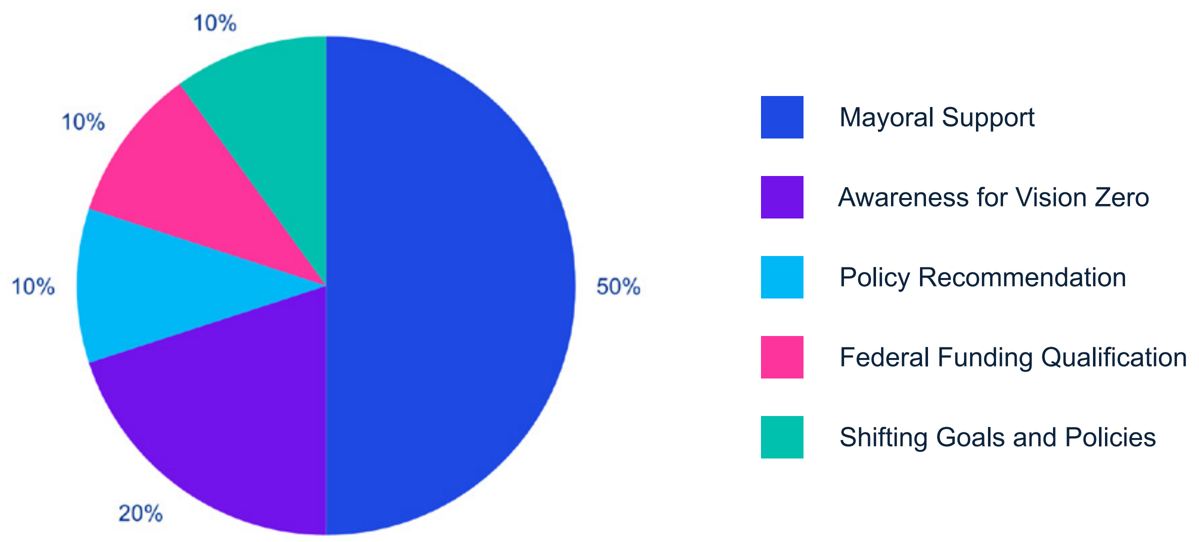
SURVEY RESULTS

**Some questions have been consolidated or not included due to them being self-explanatory or unanswered. Also, while the City of Los Angeles did not participate in this survey, questions applicable to Los Angeles have been answered where possible.*

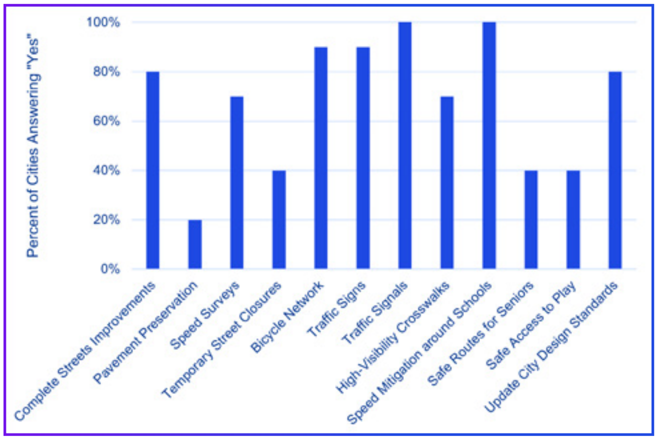
QUESTIONS 1-5:

City (Q1)	Year Program Started (Q2)	What Prompted Action (Q3)	Year Action Plan Published (Q4)	Year Action Plan Updated (Q4)	Timeline for Reaching Zero (Q5)
Boston	**2015**	Change in Mayor – first new mayor in 20 years. The transition committee recommended it.	**2016**	**2017**	**By 2030 or Sooner**
Houston	**2020**	Mayoral Direction	**2020**	**N/A**	**By 2030 or Sooner**
London	**2018**	Realization that our strategic goals required modal shift to active/zero carbon transport and that safety/road risk was a significant barrier to behavior change.	**2018**	**2021**	**Between 2030 and 2050 (2041)**
Los Angeles	**2015**	High number of pedestrian fatalities prompting mayoral action	**2017**	**2018**	**By 2030 or Sooner (2025)**
New York	**2014**	New Mayor entering office in January 2014 had opportunity for a flagship new initiative, urged by advocates following a spate of high-profile deaths of children in traffic in 2013.	**2015**	**2019, 2023**	**None**
Phoenix	**2022**	High frequency of fatal and serious injury crashes and the need for a vision zero plan to qualify for federal funding	**2022**	**N/A**	**Between 2030 and 2050**
San Diego	**2015**	Circulate San Diego advocacy organization and general increase in awareness of cities participating in Vision Zero	**2015**	**2020**	**By 2030 or Sooner**

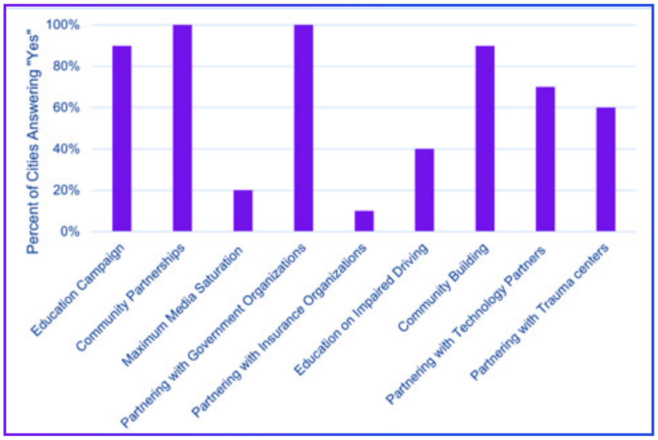
City (Q1)	Year Program Started (Q2)	What Prompted Action (Q3)	Year Action Plan Published (Q4)	Year Action Plan Updated (Q4)	Timeline for Reaching Zero (Q5)
San Francisco	**2014**	Vision Zero builds off then-Mayor Gavin Newsom's Walk First directive to prioritize pedestrian safety in San Francisco. Strong mayoral support was followed by Mayor Ed Lee to become one of the first US cities to adopt a Vision Zero policy.	**2015**	**2017, 2019, 2021**	**By 2030 or Sooner (2024)**
Seattle	**2015**	In 2015, we rebranded the Road Safety Action Plan to Vision Zero to reaffirm our safety commitment and be part of the nationwide movement.	**2015**	**2019**	**By 2030 or Sooner**
Vancouver	**2012**	Adopted the goal as part of our Transportation 2040 as a recommendation from our Active Transportation Policy Council (a group of citizens who provide advice to the City, this is a group chaired by City staff and members apply to participate)	**2016**	**N/A**	**None**
Washington, D.C.	**2015**	Part of Mayor Bowser's response to the US Department of Transportation's Mayor's Challenge for Safer People and Safer Streets	**2016**	**2022**	**By 2030 or Sooner (2024)**



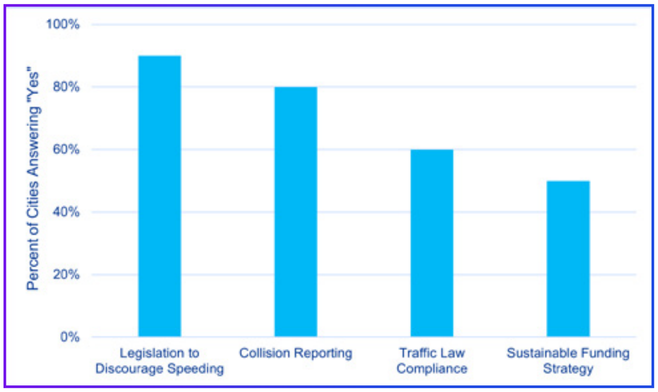
QUESTION 6, PART 1: What are the strategic goals of your program for Safe Streets for All?



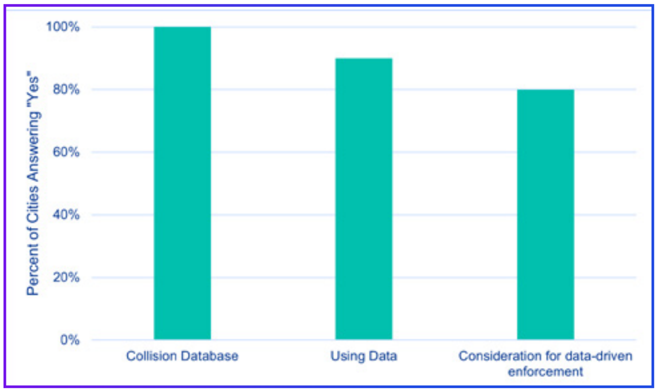
QUESTION 6, PART 2: What are the strategic goals of your program for Culture of Safety?



QUESTION 6, PART 3: What are the strategic goals of your program for Policy and Legislation?



QUESTION 6, PART 4: What are the strategic goals of your program for Relevant Data Goals?



QUESTION 7: What are the major components of your program? What are the weights for each component?

Component (%)	City A	City B	City C	City D	City E	City F	City G	City H	City I	CIty J	CIty K
Engineering	80%		25%	25%		50%	75%	60%		70%	50%
Education	20%		25%	25%		20%	10%	10%		10%	25%
Enforcement			25%	25%		20%	15%	5%			25%
Other		1	2	3	4	5		6	7	8	

1. Communication (20%), Safe Systems (36%), Safe Speeds (12%), Programming (32%)
2. Safe Vehicle Designs and Standards (25%)
3. Data Evaluation (25%)
4. We can't accurately estimate as the components are often intertwined and there are so many agencies working on Vision Zero Initiatives.
5. Equity (10%)
6. Vehicles (5%), Data Systems (20%)
7. Safe Systems Approach (100%)
8. Data Analysis/Collection, Applying for Grants, Coordination with Safety Partners (20%) Question 8: How does VZ as a priority stack with other City/Mayoral priorities?

QUESTION 8: **How does VZ as a priority stack with other City/Mayoral priorities?**

Priority (Ranking)	City A	City B	City C	City D	City E	City F	City G	City H	City I	CIty J	CIty K
Ending Homelessness			3				1		1		
Housing for All			2				2				2
Healthcare for All											
Ending Traffic Fatalities			4				5		1		4
Addressing Other Public Safety Issues			5				4		1		1
Infrastructure Resilience			6				6		1		
Other	O1	O2	O3		O4		O5		O6		O7

O1 Opioid Crisis (1), Housing Affordability (1), Improving Schools (1)

O2 Not rankable

O3 Air Quality and Carbon Reduction (1)

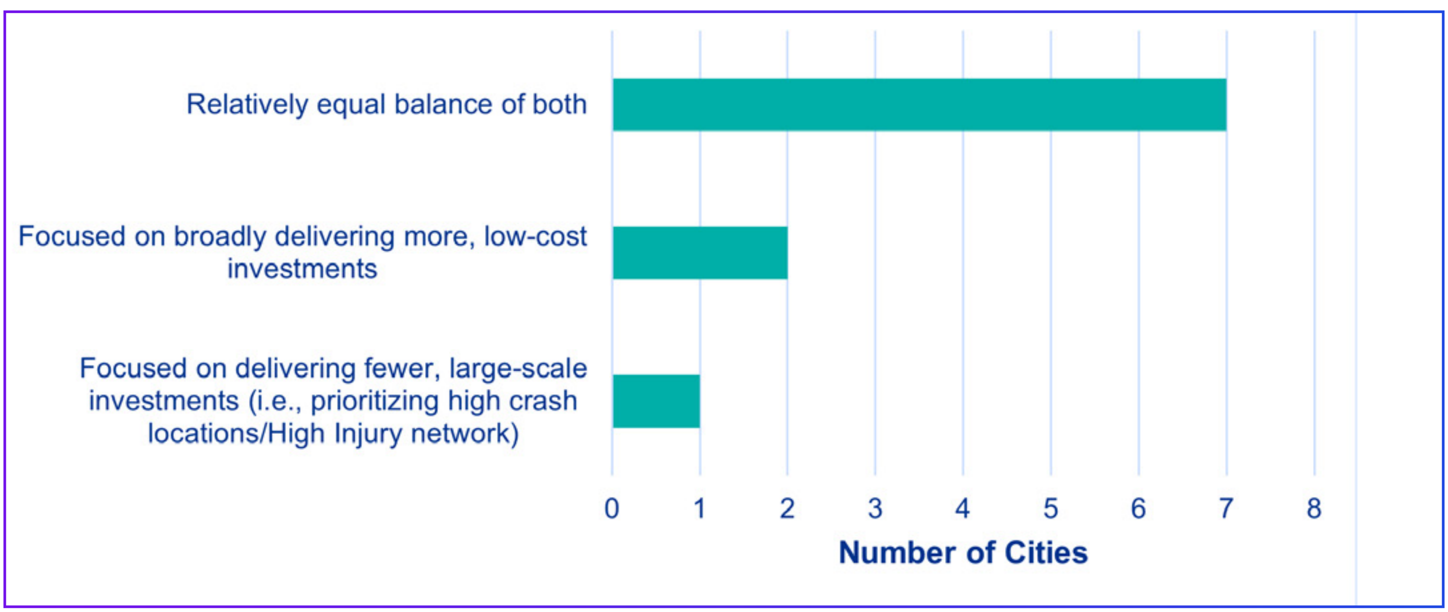
O4 We cannot provide a ranking but we would say it is definitely one of the top-tier named initiatives in terms of the publicity and attention it receives

O5 Street resurfacing/pavement condition

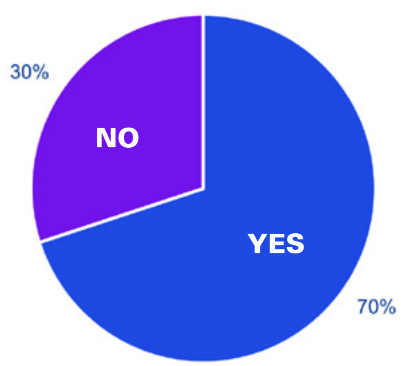
O6 Our Mayoral Priorities are not ranked. However, VZ is one of their priorities.

O7 Economic Development (3)

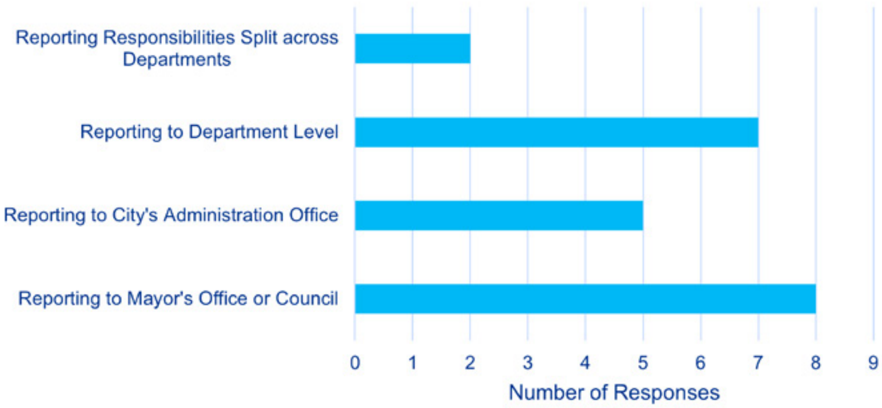
QUESTION 9: **How does your program balance broadly implement lower cost projects vs. large transformative projects at specific locations?**



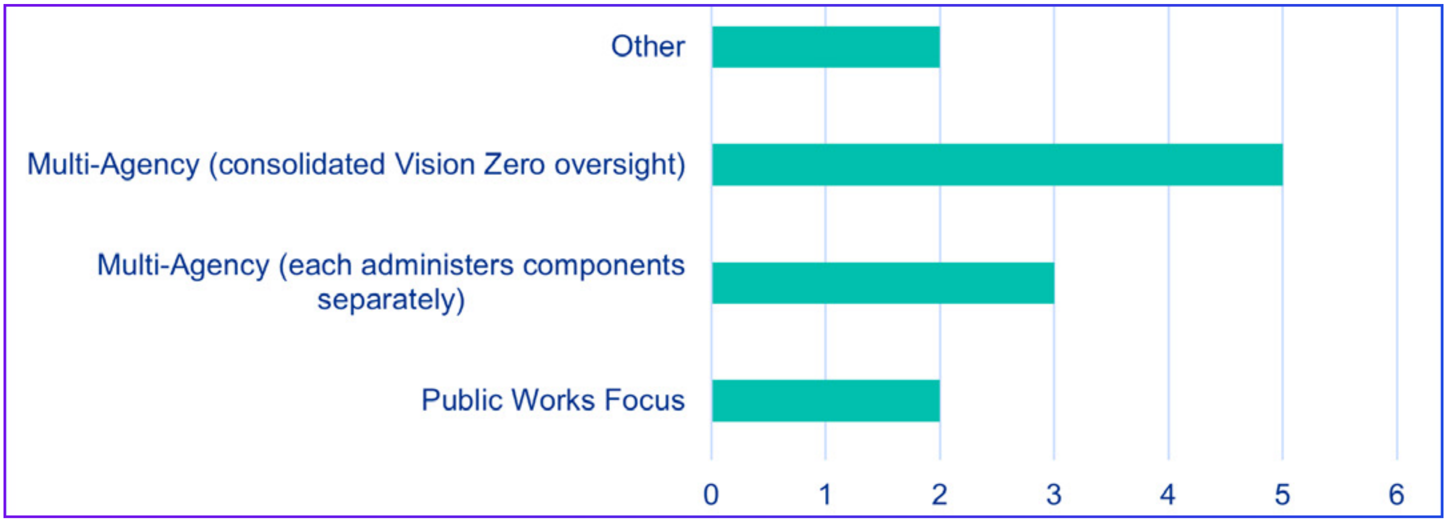
QUESTION 10, PART 1: Do you have a Project Management Office (PMO) for reporting on the performance and status of the program?



QUESTION 10, PART 2: Where do you report on the performance and status of the program?



QUESTION 11: Does your Vision Zero Program include coordination with police and public health departments? Is there program oversight that includes those agencies as well?



QUESTION 12: What was your city's total spending on capital program in last fiscal or calendar year? How much of it is spent on vision zero projects?

Expenditures	City A	City B	City C	City D	City E	City F	City G	City H	City I	CIty J	CIty K
Capital Program Expenditures ($M/year)	25+	3.3B	1.1B				1B	2.6B/ 5yr	316.6	875	
Vision Zero Expenditures ($M/year)			228.5			12	35	70-80	6	0.5	

QUESTION 13: What's the approximate average number of full-time equivalent (FTE) employee that are assigned to the program annually?

Annual FTE	City A	City B	City C	City D	City E	City F	City G	City H	City I	City J	City K
Capital Program FTE	7		6-12				30		1061		
Vision Zero FTE	0	4	6-12			2	30	3-5	5-8	10	

QUESTION 14: What are the other safety-related programs that you implemented complementary to the Vision Zero Program?

City A: Vision Zero is a goal within all of our street projects – bike network plan, transit plan, pedestrian friendly signals plan, Safe Routes to Schools

City B: Safe Routes to School; Zero Is Possible

City C: Partnership with police, marketing, training and education, vehicle safety standards programs, funding of 33 local authorities, program to increase post-collision support to victims of crashes.

City E: City Hall has convened a task force for lithium-ion battery safety following a spate of fatal fires caused by electric bicycle and electric moped batteries. DOT has been participating in conjunction with its programs to provide outreach to delivery workers who use these devices and guidance to people who may be concerned about the safety of what they ride.

City F: Office of Pedestrian Safety, Safe Routes to School, ATP, Pavement Preservation

City G: City G did not provide a response to this question.

City H: Community-based transportation plans, Active Communities Plan, Climate Action Plan, Slow Streets Program

City I: Bicycle Master Plan (includes Greenways), Pedestrian Master Plan, Safe Routes to School, Transit & Mobility, Arterial/Asphalt/Concrete Paving, Maintenance, Traffic Spot Improvement, Signal Major Maintenance, Signal Operations, Freight Spot Improvement

City J: Neighborhood transportation, active corridor improvements, traffic signals, street lighting, sidewalks & pathways, among others.

City K: DOT's Traffic Engineering and Safety Division uses HSIP funds solely for HIN corridors; Other program also executes the Annual safety Improvement program at roughly 100 locations per year using VZ priorities.

QUESTION 15: Regarding program design and delivery, please indicate which stakeholder group(s) are responsible:

City A

- **Advanced Planning –** City planning staff; Planning and Development Authority
- **Funding/Grants –** Many millions
- **Planning –** Planning – about 15 staff people
- **Design –** Planning, Engineering, and Public Works – about 25 people altogether, plus consultants
- **Construction –** Public Works – about 5 people overseeing the work, plus construction contractors

City B

- **Advanced Planning –** Planning & Development
- **Funding/Grants –** Planning & Development; Public Works
- **Planning –** Planning & Development
- **Design –** Planning & Development; Public Works
- **Construction –** Public Works

City C

- **Advanced Planning –** Road Risk team
- **Funding/Grants –** Corporate Finance
- **Planning –** Sponsorship
- **Design –** Engineering
- **Construction –** Major Projects/Planning and Program Delivery

City E:

- **Advanced Planning –** Transportation Planning & Management, Policy
- **Funding/Grants –** All divisions of DOT do some of this
- **Planning –** Transportation Planning & Management
- **Design –** Transportation Planning & Management, Traffic Operations
- **Construction –** Transportation Planning & Management (quick build) and Budget and Capital Program Management (capital)

City F:

- **Advanced Planning –** Street Transportation, Transit, Planning and Development
- **Funding/Grants –** Street Transportation, Transit, Planning and Development
- **Planning –** Street Transportation, Transit, Planning and Development
- **Design –** Street Transportation, Transit, Planning and Development
- **Construction –** Street Transportation and Transit

City G:

- **Advanced Planning –** General inclusion in plan language
- **Funding/Grants –** HSIP and SS4A applications
- **Planning –**
- **Design –** Majority of VZ elements within basic services; sidewalks, bikeways, streetlights, signals, roundabouts
- **Construction –** Construction of the above

City H:

- **Advanced Planning –** Municipal Transportation Agency/ Department of Public Health
- **Funding/Grants –** Municipal Transportation Agency/ Department of Public Health
- **Planning –** Municipal Transportation Agency
- **Design –** Municipal Transportation Agency
- **Construction –** Municipal Transportation Agency

City I:

- **Advanced Planning –** Policy and Planning
- **Funding/Grants –** Policy and Planning, Project Development, Transportation Operations
- **Planning –** Policy and Planning, Project Development, Transportation Operations
- **Design –** Project Delivery, Capital Projects, Transportation Operations
- **Construction –** City Crews, Contractors

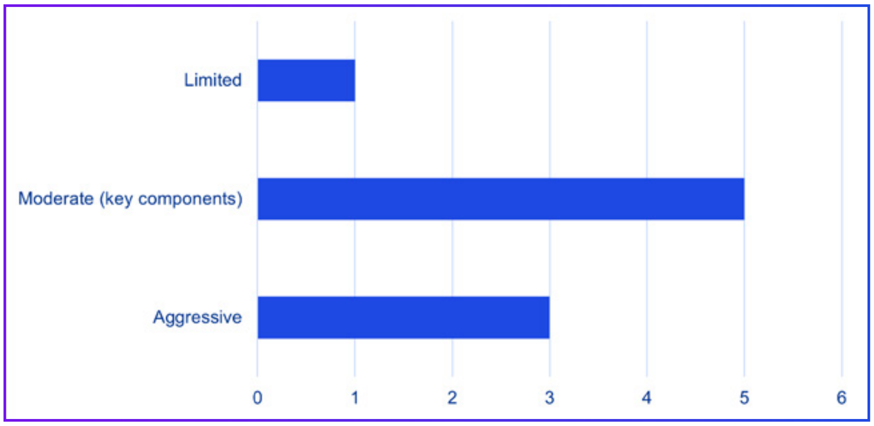
City J:

- **Advanced Planning –** Vision Zero team in Traffic & Data Management Branch
- **Funding/Grants –** Vision Zero team in Traffic & Data Management Branch
- **Planning –** Vision Zero team in Traffic & Data Management Branch
- **Design –** Vision Zero team in Traffic & Data Management Branch requests civil design to Transportation Design and Streets Design, and support from Electrical design for signal / flashing beacons, etc. Signal timing and sign/paint plans done by Traffic & Data Management
- **Construction –** Completed by internal City crews or external contractor depending on competing priorities

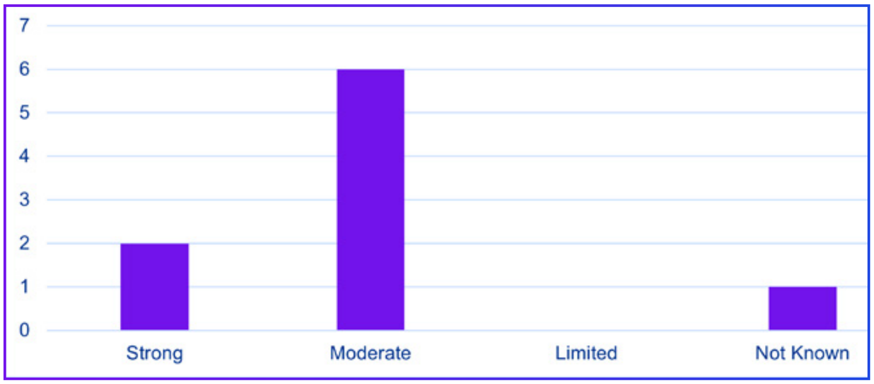
City K:

- **Advanced Planning –** DOT – Planning and Sustainability Division; DOT State and Regional Planning
- **Funding/Grants –**
- **Planning –** DOT – Planning and Sustainability Division
- **Design –** DOT – Traffic Engineering and Signals Division
- **Construction –** DOT Infrastructure Project Management Division; and DOT – Traffic Engineering and Signals Division

QUESTION 16, PART 1: Which statement best describes how your city is investing in Vision Zero?



QUESTION 16, PART 2: Which statement best describes the results being realized from those investments?



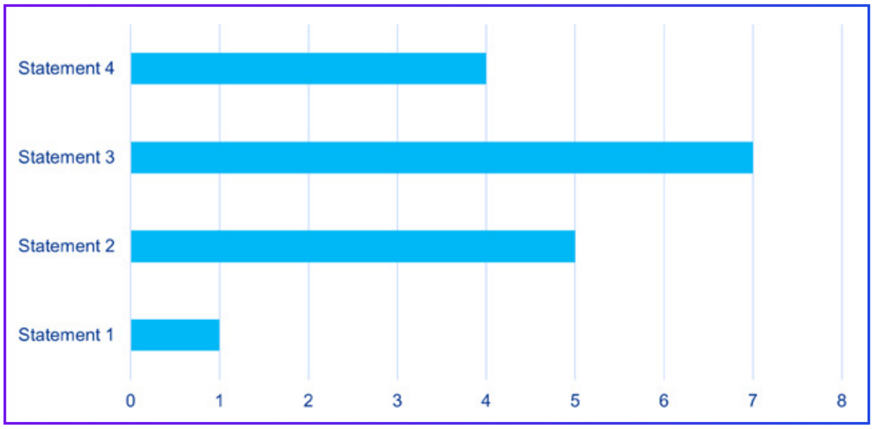
QUESTION 17: Allocation of Resources - Which statements are true for how your resources are assigned?

Statement 1: We utilize target metrics to determine the number of program personnel staffing levels we need for a given year

Statement 2: The number of program personnel is determined by the annual capital budget for projects and resources

Statement 3: We have designated program personnel that are assigned to projects on an as needed basis based on project type, size, etc.

Statement 4: We hire contracted resources to support projects and provide program oversight and management support



QUESTION 18: What areas of program implementation are currently challenges/barriers and priorities for improvement?

City A:

- **Challenges and Barriers –** Resources needed for effective community engagement; pushback by the community for parking loss and loss of travel capacity; concerns that transportation improvements will lead to gentrification
- **Priorities –** Determining the level of engagement needed for each project and finding ways to do it; hiring people in the community to help with communications and engagement

City B:

- **Challenges and Barriers –** Staff resources to scale for a large city
- **Priorities –** Adopt multimodal service standards; rebuild HIN locations

City C:

- **Challenges and Barriers –** Speed of implementation
- **Priorities –** Reconciliation of safety objectives with other performance priorities such as bus network performance

City E:

- **Challenges and Barriers –** General culture change post-pandemic towards reckless driving, reductions in enforcement and vehicle seizures leading to more blatant scofflaw behavior (e.g. obstructed license plates to evade our automated enforcement), rise of e-mobility, especially light motorcycles/mopeds and stand up scooters, activists and City Council pushing well-meaning but unhelpful laws that direct resources in ways that could be better spent on proven solutions, shrinking municipal work force, difficult to hire and retain staff
- **Priorities –** Return manual enforcement to 2019 levels, expand automated enforcement to bike lanes and more red light cameras, restore safety project production to 2019 levels

City F:

- **Challenges and Barriers –** For Access Management, the barrier is property right. User control, is a civil liberty issue
- **Priorities –** Gaining momentum to implement strategies

City G:

- **Challenges and Barriers –** Large amount of deferred maintenance projects and limited new projects to address widespread improvements with major reconfigurations
- **Priorities –** Safety is a priority, but it has limited resources given the large infrastructure backlog and huge inventory of assets to make improvements on

City H:

- **Challenges and Barriers –** Systemic societal challenges outside of transit authority's control that increase risk to traffic violence (homelessness, cost of living, racial inequities), need for more local authority leading to legislation efforts (i.e., automated speed enforcement, vehicle weight/size and impacts on vulnerable road users)
- **Priorities –** Fulfill commitments on our Action Strategy on time

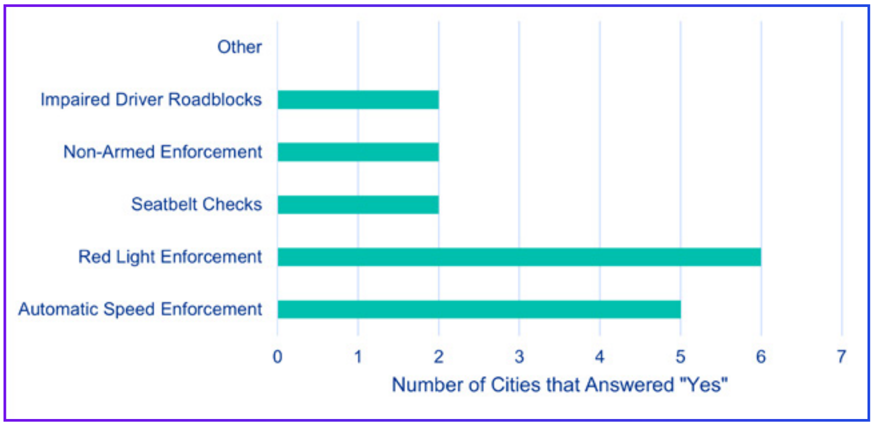
City I:

- **Challenges and Barriers –** Political priority, funding, staffing and crew capacity
- **Priorities –** From the VZ Top-to-Bottom Review: (1) Accelerate planning for broader or systemwide implementation of proven interventions; (2) Be champions for VZ as we engage with our partners; (3) Expand automated enforcement in a data-driven equitable way; (4) Strengthen SDOT's VZ core and matrix teams.

City K:

- **Challenges and Barriers –** Ensuring the clear connection between HIN corridors and our capital program
- **Priorities –** See above; also ensuring that capital projects team (whose projects last multiple years) always reflect latest safety.

QUESTION 19, PART 1: What different types of enforcement are implemented in your city?



QUESTION 19, PART 2: Results of Enforcement

City B: Automatic speed enforcement and red light enforcement not legal

City C: Hard to tell the effects of enforcement as they are not done in isolation

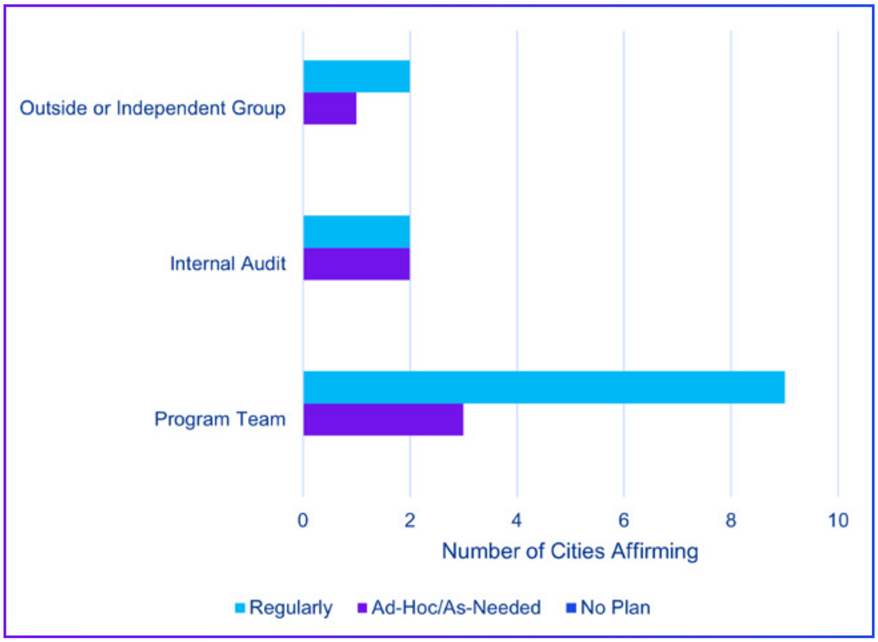
City E: At locations with cameras, speeding is down an average of 72%

City F: Contracts for automatic red light and speed cameras were discontinued by the City; Seatbelt laws are “secondary violations” and therefore cannot be a reason for a traffic stop. Citations are issued if there is another primary violation

City I: We currently operate automated speed enforcement in school zones. It helped reduce speeds on average by 4%, reduced all collisions by 50% in school zones

City K: Automatic speed enforcement had a 30% decrease in injury crashes (2019 data)

QUESTION 20: Which statement best describes your approach to measurement of vision zero program performance?



QUESTION 21: What are the key performance indicators (KPI) you monitor and track?

City A:

- **Engineering –** Location of high-quality bike lanes installed; location of transit lanes installed; location/number of neighborhood slow street zones; location/number of speed humps installed; location/number of intersection improvement projects; location/number of signals improved
- **Education –** Number/variety of engagement activities associated with projects
- **Enforcement –** Not tracked

City B:

1. Change in traffic deaths and serious injuries by mode, by demographics and neighborhood, normalized by population.
2. Percentage of HIN with new street safety improvements. List improvements made, including the number of intersections and treatment type and miles of four, six, and eight lane streets converted to safer configurations.
3. Percentage of drivers exceeding the speed limit and median speeds on select streets.
4. Percentage of street safety improvements in communities disproportionately impacted by traffic deaths and serious injuries.
5. Commute mode share.
6. Total number and percentage of street reconstruction projects with multimodal safety needs and improvements made to address needs.
7. Percentage of traffic stops based on top contributing crash factors on City streets. Include driver characteristics.
8. Miles of sidewalk and bikeways constructed and maintained, include HIN streets.
9. Number of community members reached by Vision Zero engagement activities.
10. Number and type of agencies and community members represented on Vision Zero working groups.

City C:

- **Engineering –** Program delivery against plan
- **Education –** Public awareness of key campaigns, eg speed compliance. Numbers of people trained through our training programs
- **Enforcement –** Number of traffic offenses reports issued by the police

City E:

- **Engineering –** Mileage of bike lanes, numbers of individual installations e.g. turn calming or LPIs
- **Education –** Numbers of schools visited, numbers of events held
- **Enforcement –** Reductions in violations issued by speed and red light cameras

City F:

- **Engineering –** Number of Improvements, Number of Fatal and Serious Injuries
- **Education –** Air time, Number of Social Posts, Retweets, Website hits, etc
- **Enforcement –** Number of collisions, number of hazardous citations, number of non-hazardous citations

City G:

- **Engineering –** Total number of severe and fatal annual: Goal Zero by 2025
- **Education –** None
- **Enforcement –** Percentage reduction in severe and fatal traffic collisions for each fiscal year from the baseline 2015 through 2025

City H:

- **SAFE STREETS**
  - Apply the quick-build toolkit on the entire HIN by 2024.
  - Develop a comprehensive speed management plan with the goal of slowing vehicle speeds on the HIN using tools such as speed limit reductions (as authorized by AB 43), traffic signal re-timing, installing traffic calming devices, and re-purposing travel lanes (road diets). The Plan will include complementary tools like education and outreach and high visibility enforcement to slow speeds.
  - Complete 100 traffic calming devices annually, including locations focused on areas that have been prioritized for seniors, people with disabilities, and schools.
  - Expand active transportation network for biking and walking, including low-car and car-free streets, Slow Streets, and protected bike lanes, with community support.
  - Ensure all intersections on the HIN have high visibility crosswalks by 2024 and daylighting by 2023.
  - Modify all eligible signals on the HIN for slower walking speeds and LPIs.
  - Upgrade 40% of signals on the HIN with Accessible Pedestrian Signals (APS) and 95% of signals on the HIN with Pedestrian Countdown Signals (PCS).
  - Evaluate No Turn on Red (NTOR) policy and develop expansion plan based on results.
  - Develop expansion for installation of left-turn traffic calming at 35 new high priority locations on the HIN.
  - Expand red light camera program with eight new locations.

- **SAFE PEOPLE**
  - Issue 50% of traffic citations for top five causes of collisions (Focus on the Five).
  - Continue to extend safe speeds enforcement program with monthly ongoing speed enforcement activities rotating through HIN corridors.
  - Conduct High Visibility Traffic Safety Event (HVTSE) actions along the HIN each month to target unsafe driver behaviors related to crashes. HVTSE are coordinated efforts combining prevention, education, and enforcement with a coordinated communication strategy designed to educate the public and promote compliance with the law.
  - Pursue next steps from Budget & Legislative Analyst's (BLA) report analyzing data on racial disparities in traffic stops and policy recommendations to reduce racial disparities and harm during traffic stops.
  - Continue to regularly run culturally competent and accessible education campaigns and outreach to create traffic safety champions and shift culture through communication tools (bus ads/shelter ads, radio, social media)
  - Facilitate training opportunities for motorcycle riders and similar road users to encourage safe and informed riding.
  - Provide annual grants to community-based organizations to build support for safer streets by engaging seniors and people with disabilities.

- **SAFE VEHICLES**
  - Ensure federal, state, and local public policy related to autonomous vehicles is informed by local initiatives to support the safety of all road users.
  - Issue annual public-facing report on driving behavior trends.
  - Develop and report on correction plans against unsafe driving behavior.
  - Explore additional collision avoidance technologies for city fleet vehicles once next vehicle procurement cycle begins.

- **DATA SYSTEMS**
  - Increase transparency and accountability by integrating the statewide crash database
  - Integrate police department collision data into new tracking system for timely, efficient reporting and sharing of PD-reported injury collisions, including geolocated data.
  - Issue an annual report on Severe Injuries utilizing hospital (ZSFG) and police data, allowing monitoring of injury trends over time and mode.
  - Update the HIN map with 2017-2021 linked police, hospital, and EMS data.
  - Issue an annual research brief to address traffic injury inequities related to homelessness, race/ethnicity, language, income, and immigration status (one topic each year) to inform policies, projects, programs, and needed data quality improvements.

City I:

- **Engineering –** Improve safety on at least 3 corridors per year
- **Education –** No KPI
- **Enforcement –** No KPI

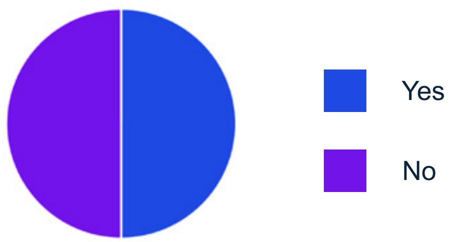
City J:

- **Engineering –** # of improvements per type, # of traffic related fatalities, # of serious injuries, % crash reduction by safety improvement, % of sustainable mode share
- **Education –** Number of engagement events
- **Enforcement –** N/A

City K:

- **Engineering –** Miles of bikeways, miles of bus lanes, number of improvements, of intersections touched, number of HIN corridors touched
- **Education –** Impressions, engagements, other qualitative evals
- **Enforcement –** Automated Traffic impacts on injuries

QUESTION 22: Do you perform benefit-cost assessments for individual traffic safety solutions?



QUESTION 23: What are the tangible examples of success?

City A:

- **Uses of Data –** Reductions in the number of people speeding; reduction of injury crashes as measured by EMS
- **New Regulations –** Increase in the use and awareness of side guards and large vehicles with good direction vision
- **Education –** General awareness of projects and why we are doing them in a particular neighborhood

City B:

- **Uses of Data –** Data became backbone for grant applications leading to $50m in federal funding for safe streets projects
- **Traffic Safety Solutions –** Every location rebuilt under VZ program has resulted in reduced number of serious crashes
- **Education –** Reached over 2000 people for VZ education in 2022

City C:

- **Uses of Data –** Data has been used to target interventions including engineering, police deployment. We also have increased data transparency to improve public understanding/dialogue
- **Traffic Safety Solutions –** We have measurable reductions in deaths and serious injuries at locations where we have implemented engineering including lowering speed limits and junction redesign.
- **Enforcement Strategies –** We are increasing levels of traffic enforcement and have a target to create capacity to enforce 1 million offences per annum by next year
- **New Regulations –** We introduced the Direct Vision Standard (DVS) permit system for vehicles over 12 tons to require good visibility for the driver. In the 2022/23 financial year, we published the DVS One Year On report highlighting the scheme's outcomes during its first full year of enforcement. This showed that fatal collisions where vision is a contributory factor were reduced by half, down from 12 to six, between 2018 and 2021. Data for the 2022/23 financial year shows that fatalities had been reduced further to three.

City E:

- **Uses of Data –** Digitization of police data entry, real-time feed of all police data to DOT, use of telematics data for universal speed data
- **Traffic Safety Solutions –** Quick build projects, LPIs, Turn Calming, protected bike lanes, signal timing for 25mph, road diets
- **Enforcement Strategies –** 24/7 speed cameras, bus lane cameras, piloting bike lane cameras, focusing enforcement on safety violations rather than other summons
- **New Regulations –** Right of way law, tougher laws around crashing while suspended
- **Education –** School and older adult (65+) based education, plus Street Teams and Street Ambassadors

City F:

- **VZ Plan is less than a year old, quantifiable measures to determine tangible successes have not been performed**

City G:

- **Uses of Data –**Data heavy look at crash factors to prioritize and make improvements
- **Traffic Safety Solutions –** 50 miles of bicycle lanes added each year. Recently we had two sequential years with no fatal bicycle crashes, but, unfortunately, that trend did not continue as we continue expand improved bike network mileage
- **Enforcement Strategies –** PD gets OTS grants for specific enforcement with for vulnerable road users

City H:

- **Uses of Data –** Successful project level evaluation leading to expansion of No Turn on Right project, using public health data to establish senior slow zones
- **Traffic Safety Solutions –** Effectiveness of Quick Build Program leading to commitment to apply the toolkit to the entire HIN
- **Enforcement Strategies –** High Visibility Enforcement for Safe Speeds campaign minimizes racial bias in citations
- **New Regulations –** CA AB43 allowing cities to lower speed limits along business corridors
- **Education –** You're your Turn campaign paired with left turn traffic calming extended engineering benefits, leading to expansion of pilot program

City I:

- **Uses of Data –** Use of citywide speed data in project development and evaluation
- **Traffic Safety Solutions –** Reduced speed limits citywide lead to overall reduction in probability of crashes, independently confirmed by Insurance Institute of Highway Safety. Implementing LPIs resulted in 48% reduction in pedestrian turning collisions and a 34% reduction in serious injury and fatal pedestrian collisions. Road Diets have also had meaningful impacts on improving overall safety.
- **Enforcement Strategies –** School speed zone and red light automated enforcement within the city indicate safety gains as mentioned above
- **New Regulations –** Exploring new automated enforcement legislation to align with state authority. Implementing safe systems approach in all projects

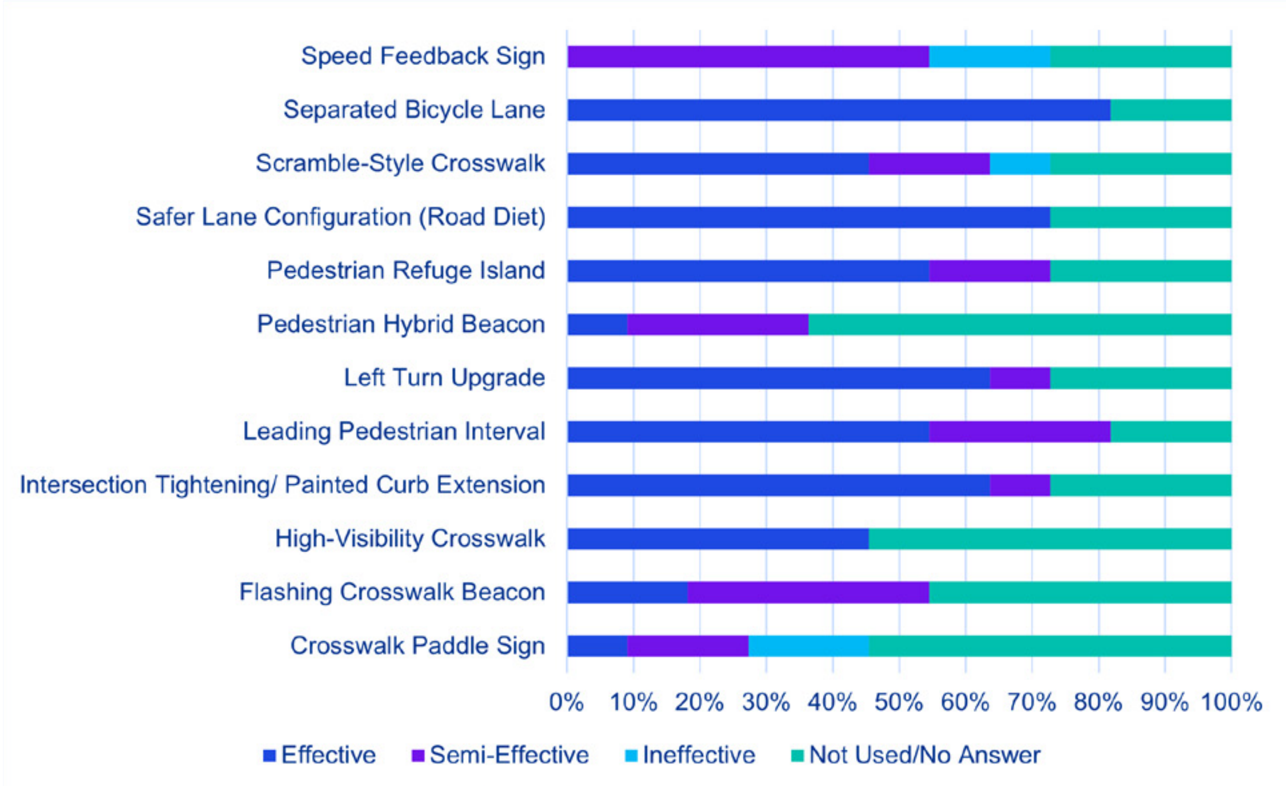
City J:

- **Uses of Data –** Reaching out to health partners to share hospital and ambulance data
- **Traffic Safety Solutions –** Flashing beacons, LPIs, slow zones, traffic calming, all walk phases, protected intersections, protected turn phases, led lighting, accessible pedestrian signals
- **Education –** Grandma on the move safety campaign; Collisions Hackathon

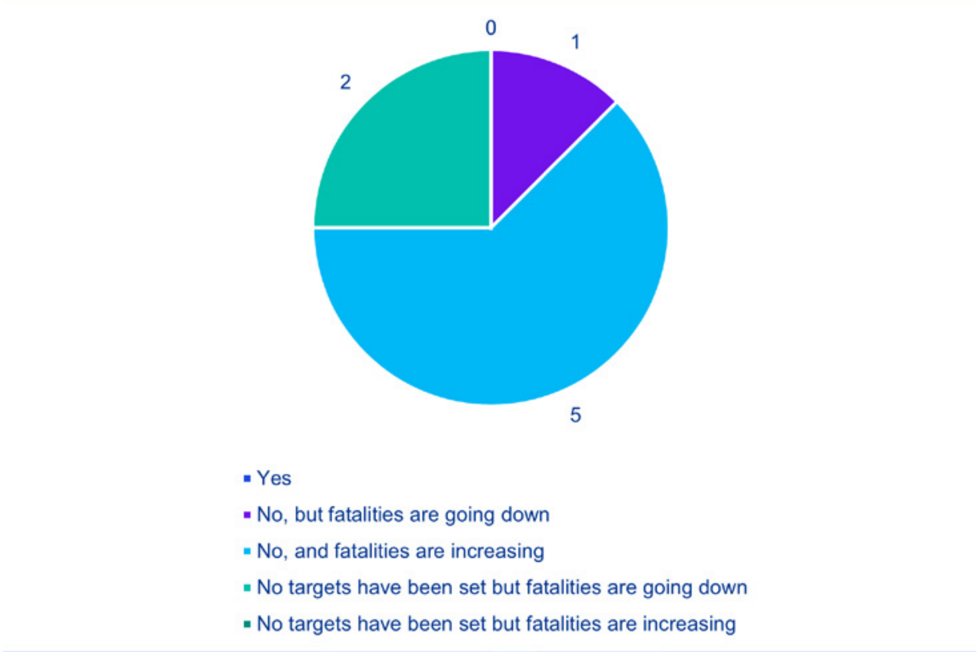
City K

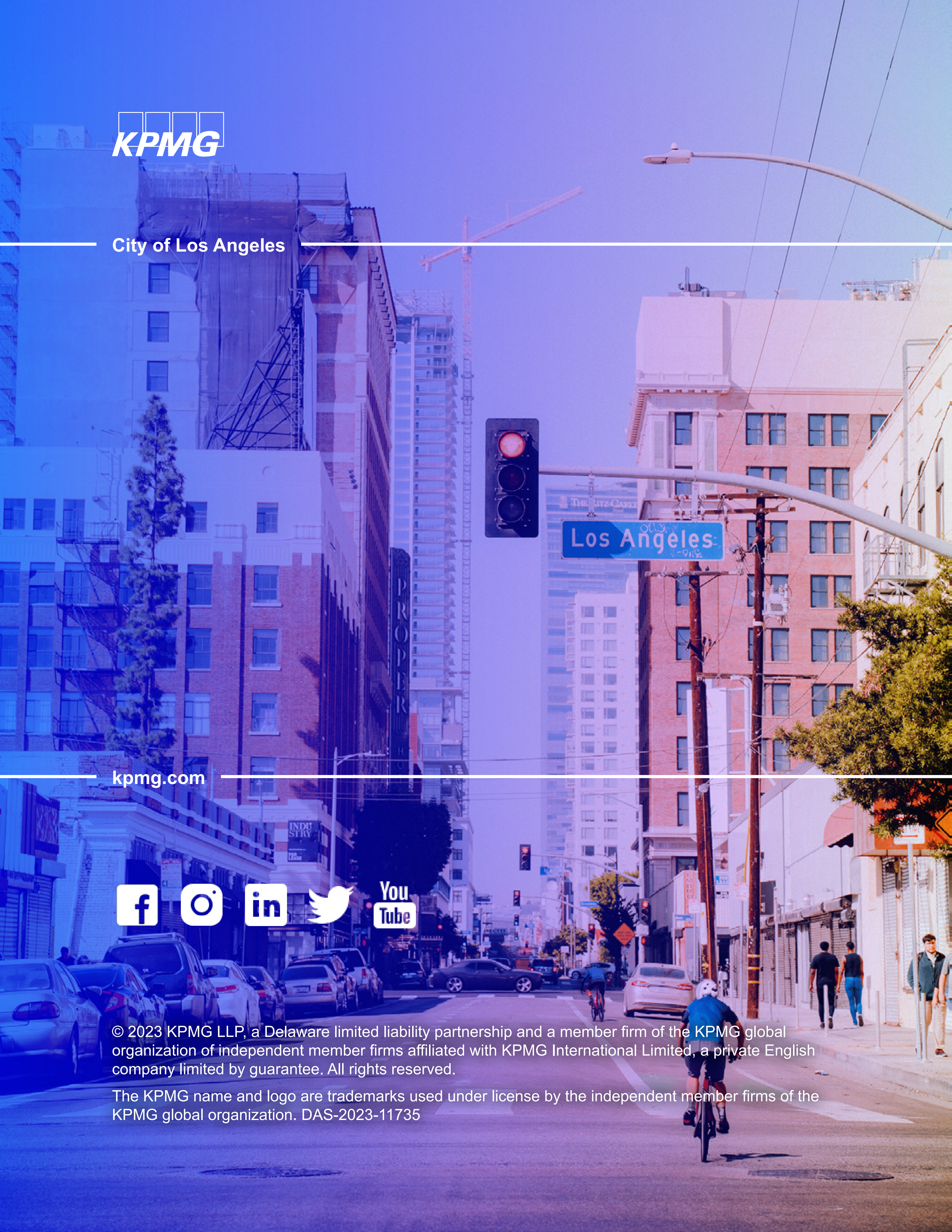
- **Uses of Data –** Crash Composite Index drives priorities on Hwy Safety Improvement Program (federal) and Annual Safety Improvement Program (mix of federal and local)
- **Enforcement Strategies –** Network of automated enforcement cameras is among the largest in the US. 2019 data showed 30% drop in injury crashes 12 months after installation of cameras
- **New Regulations –** Increased fines for traffic violations
- **Education –** Participate in a regional PSA campaign managed by MPO; have local funds for education and outreach as well.

QUESTION 24: What is the level of effectiveness of implementation of different improvements?



QUESTION 25: Are you meeting your fatal reduction targets towards reaching zero?





KPMG

City of Los Angeles

kpmg.com

ATTACHMENT 2

VISION ZERO

LOS ANGELES | 2015-2025

ATTACHMENT 2

Vision Zero Safety Study

LADOT

WITH SUPPORT FROM FEHR PEERS

JANUARY 2024

Statement of Protection of Data from Discovery and Admissions

This study applies a systemic safety approach that identifies certain features on particular roadways that are correlated with specific collision types and frequencies. This broad approach is necessitated by the inherent nature of covering an entire agency's facilities in one study and the limited scope/budget available to prepare a safety study. Limited time is available to perform field observations throughout the study area to contextualize the data, and therefore, it is beyond the scope of work to perform in-depth "hot spot" evaluations at all locations.

Section 148 of Title 23, United States Code

REPORTS DISCOVERY AND ADMISSION INTO EVIDENCE OF CERTAIN REPORTS, SURVEYS, AND INFORMATION — Notwithstanding any other provisions of law, reports, surveys, schedules, lists, or data compiled or collected for any purpose relating to this section, shall not be subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at the location identified or addressed in the reports, surveys, schedules, lists, or other data.

Acknowledgments

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GRANT ID: LRSP224

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What's in this Plan?

Executive Summary

LADOT remains steadfast in our commitment to ensure that all people are able to travel safely, with an emphasis on the most vulnerable users of our streets.

In 2015, the City of Los Angeles (City) responded to a trend of increasing local roadway traffic fatalities by undertaking Vision Zero – an ambitious initiative to reduce traffic fatalities citywide to zero by 2025. After the initiative was declared, the Los Angeles Department of Transportation (LADOT) investigated the state of traffic safety in depth and released its first High Injury Network (HIN) and Safety Study.

This plan, focusing primarily on data between 2017 and 2021, serves to show where progress has been made, where attention is needed, and what can be done to make improvements. The contents of the plan include a citywide systemic safety analysis, a new high injury network (HIN) and top scoring locations, and an update to LADOT's countermeasure toolbox.

Chapter 1 - Introduction provides an overview of the history of the Los Angeles Vision Zero program. This chapter also includes a summary of national safety trends, and an overview of current state and federal roadway safety programs and policies.

Chapter 2 – Citywide Safety Analysis summarizes the key findings from the collision landscape and systemic analyses which look at trends related to demographics, behavior, time and dates, and roadway and built environment characteristics. The analysis found that killed and severely-injured (KSI) collisions have increased by approximately 13%, from 1,472 in 2017 to 1,658 in 2021. Pedestrians were involved in 38% of these KSI collisions; 20% involved motorcyclists, 9% involved bicyclists, and the remaining 33% were vehicle-only collisions. These trends demonstrate that if Vision Zero is to be achieved, an updated approach is needed. The remaining chapters provide guidance for targeted action.

Chapter 3 – High Injury Network and Prioritization presents an updated HIN to help decision-makers strategically invest resources to have the largest impact on safety outcomes. The new HIN accounts for 549 miles of roadway, which represents 7.5% of the citywide roadway network. Additionally, mode-specific HINs for vehicles, motorcycles, pedestrians, and bicyclists were created as a part of this effort. To further hone Vision Zero strategic investments, LADOT identified and ranked a high-scoring subset of the HIN: Prioritization of Corridors and Intersections. Chapter 3 concludes by diving further into the systemic analysis which distinguishes 16 risk factors and 24 collision profiles, and presents key trends related to Council Districts, equity, and COVID-19.

Chapter 4 – Countermeasure Toolbox pairs the collision profiles in Chapter 3 with tailored countermeasures, and provides an updated toolbox of strategies for LADOT to implement on future projects.

Equipped with an updated understanding of the state of traffic safety, LADOT will deploy a renewed set of strategies that meet the challenges of today. LADOT remains steadfast in its commitment to ensure that all people are able to travel safely, with an emphasis on the most vulnerable users of our streets.

Key Takeaways

SEVERITY INCREASING

Fatal and severe injury collisions increased by 13% between 2017 and 2021.

STRATEGIES FOR SIGNALS

11% of LA intersections are signalized, but they account for over 50% of fatal and severe injury collisions.

IMPACT ON PEDESTRIANS

Pedestrians are involved in 38% of fatal and severe injury collisions, while 16% of all trips in LA are made on foot.

EVENING FOCUS

The largest share of fatal and severe injury collisions occur between 6 PM and 9 PM.

SPEED KILLS

Unsafe Speed is the primary violation type in 40% of vehicle-only collisions that resulted in a fatality.

EQUITY EMPHASIS

Equity emphasis areas, defined by LA's Health & Equity Index, make up 14% of LA, but represent 39% of fatal and severe injury collisions.

All Modes HIN

- Top 10 Scoring Intersections
- Top 10 Scoring Corridors
- High Injury Network (HIN)

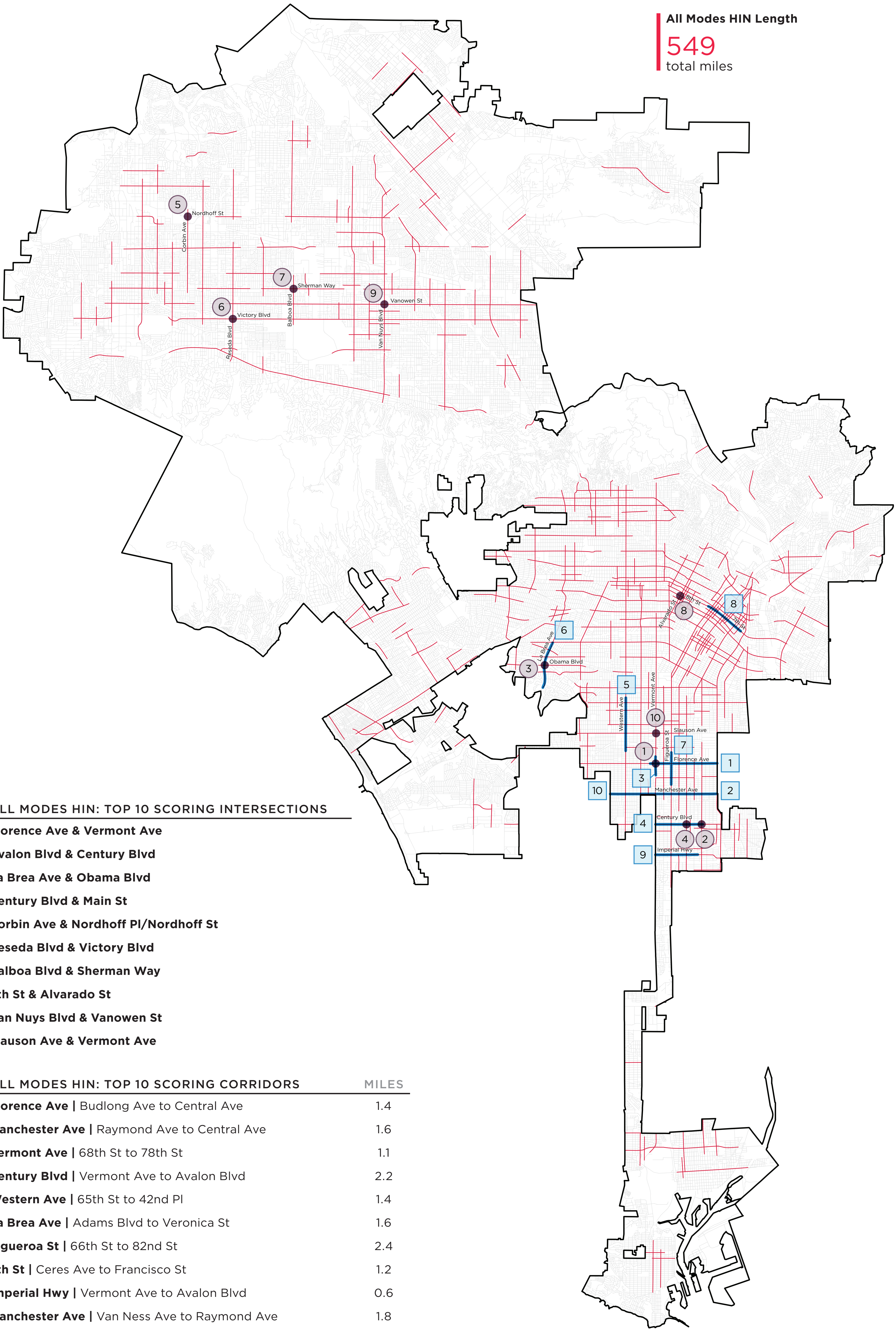
Where are collisions occurring?

61.8%
of all KSI collisions fall on

7.5%
of the citywide network

All Modes HIN Length

549
total miles



ALL MODES HIN: TOP 10 SCORING INTERSECTIONS

1	**Florence Ave & Vermont Ave**
2	**Avalon Blvd & Century Blvd**
3	**La Brea Ave & Obama Blvd**
4	**Century Blvd & Main St**
5	**Corbin Ave & Nordhoff Pl/Nordhoff St**
6	**Reseda Blvd & Victory Blvd**
7	**Balboa Blvd & Sherman Way**
8	**8th St & Alvarado St**
9	**Van Nuys Blvd & Vanowen St**
10	**Slauson Ave & Vermont Ave**

ALL MODES HIN: TOP 10 SCORING CORRIDORS

		MILES
1	**Florence Ave |** Budlong Ave to Central Ave	1.4
2	**Manchester Ave |** Raymond Ave to Central Ave	1.6
3	**Vermont Ave |** 68th St to 78th St	1.1
4	**Century Blvd |** Vermont Ave to Avalon Blvd	2.2
5	**Western Ave |** 65th St to 42nd Pl	1.4
6	**La Brea Ave |** Adams Blvd to Veronica St	1.6
7	**Figueroa St |** 66th St to 82nd St	2.4
8	**7th St |** Ceres Ave to Francisco St	1.2
9	**Imperial Hwy |** Vermont Ave to Avalon Blvd	0.6
10	**Manchester Ave |** Van Ness Ave to Raymond Ave	1.8

Chapter 1

INTRODUCTION

Purpose of the Safety Analysis Update

The Vision Zero initiative was established in 2015 by former Mayor Garcetti with the goal of eliminating traffic deaths in the City of Los Angeles by 2025. In issuing Executive Directive No. 10, safety was declared the City's "number one priority in designing and building our streets and sidewalks."

The Los Angeles Department of Transportation (LADOT) then went to work, identifying key roadway safety issues, patterns, and locations, which were documented in its 2017 Safety Study and the release of the City's first High Injury Network. This study builds on that early effort by examining new collision and related roadway data, using state-of-the-practice systemic analysis methodologies, to identify a new set of priority locations and uncover how roadway safety trends in Los Angeles have changed since Vision Zero was adopted.

Since 2017, LADOT has installed over 6,700 safety treatments on the High Injury Network as part of its Vision Zero Implementation Strategy.

Newly Installed High Intensity Activated CrossWalK (HAWK) at Western Ave and 39th Pl

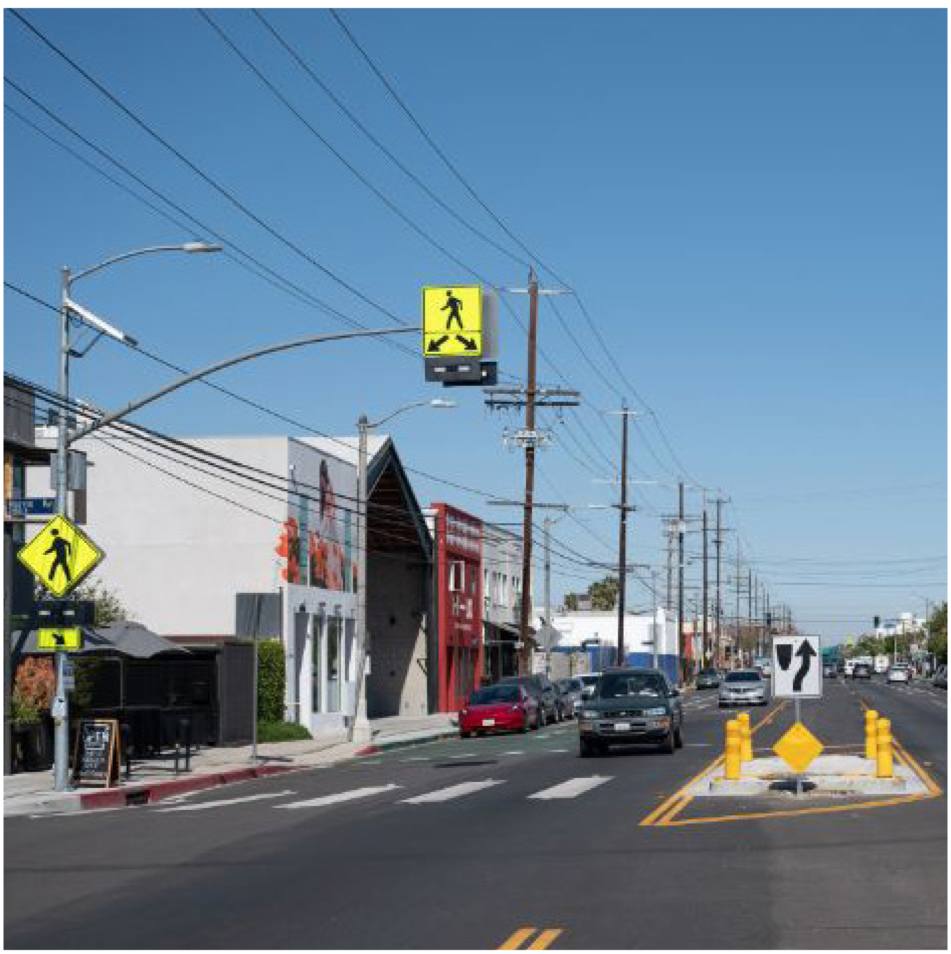
City of Los Angeles Vision Zero Policy Statement

Mayor Eric Garcetti's Executive Directive 10, issued in August 2015, declared that **safety should be the number one priority** in designing and building streets and sidewalks. This directive established two Vision Zero goals for Los Angeles:

- **Reduce traffic fatalities citywide by 20%** by 2017, prioritizing pedestrian fatalities involving older adults and children
- **Reduce traffic fatalities citywide to zero** by 2025

The LADOT Vision Zero work plan objectives are:

- Prioritize projects with the highest potential to reduce the greatest number of collisions resulting in severe injuries and fatalities;
- Prioritize projects that address known threats to public safety, addressing severity, vulnerability, social equity, and cost-effectiveness;
- Design improvements according to collision data and crash patterns; and
- Update HIN and Priority Corridors regularly as new data becomes available.



Vision Zero Project on West Adams Blvd

Local Parallel Efforts

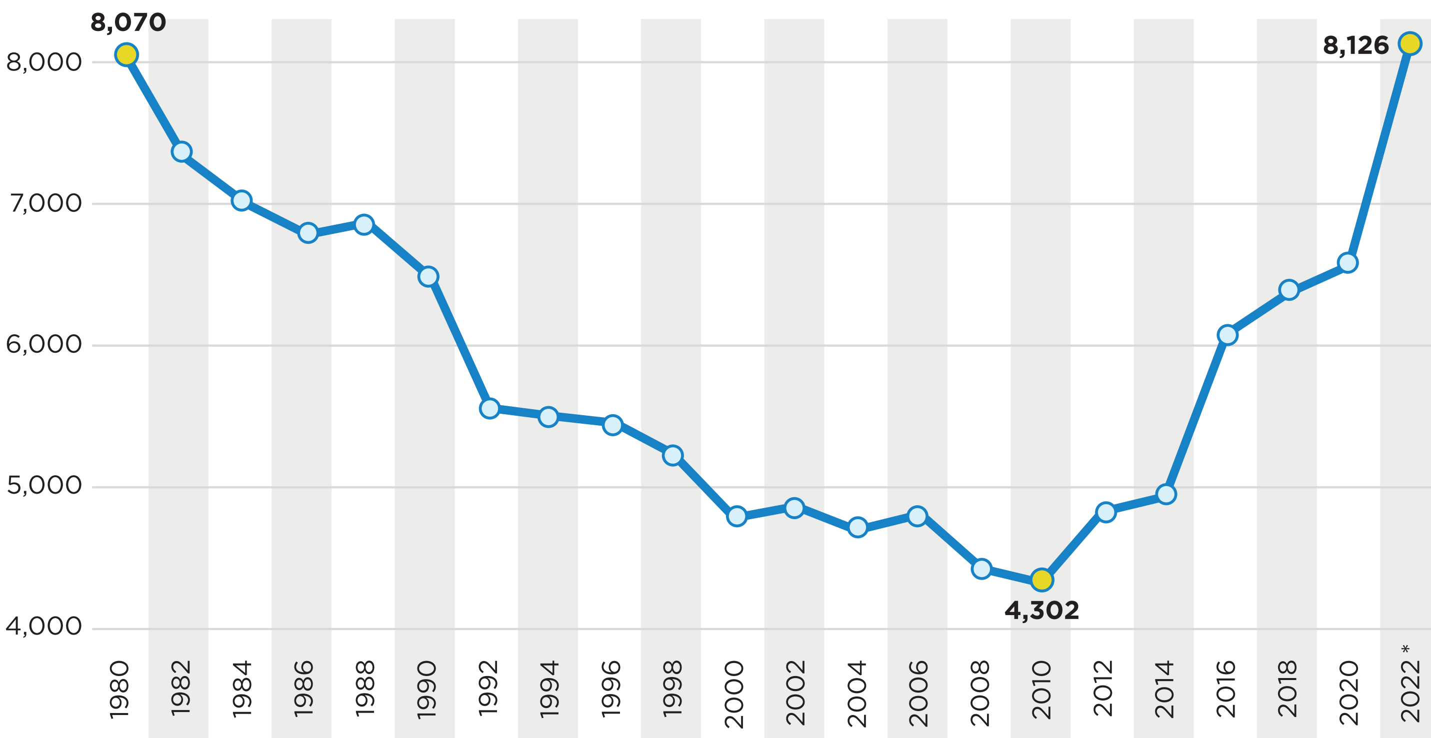
In 2020, Mayor Eric Garcetti put forward Executive Directive No. 25 - LA's Green New Deal: Leading by Example, which included direction to achieve "zero carbon ground transportation" through a menu of strategies such as prioritizing "active transportation infrastructure based on the Plan for a Healthy Los Angeles' Community Equity and Health Index and the High Injury Network."

LADOT is prioritizing work to implement the 2035 Mobility Plan Enhanced Network projects. The Los Angeles Vision Zero program is complementary to the 2035 Mobility Plan. Ensuring both plans inform and leverage mutually beneficial resources will be key to accomplishing their respective goals. An Interdepartmental MOU was established in January 2022 between LADOT and several other City departments responsible for delivering roadway projects, with the goal of increased coordination and more effective implementation. The information included in this study can help to inform and progress these efforts.

National Safety Trends

Nationally, road traffic fatalities have steadily increased since 2010, with a marked increase since the onset of the COVID-19 pandemic. Crashes on urban roads increased **16%**, and pedestrian fatalities have increased to the highest levels recorded in recent decades. Cities have also experienced increases in risk-taking driver behavior since 2020, including higher instances of speeding and impaired or distracted driving. Trends in Los Angeles have been similar to those occurring nationally.

Number of Annual U.S. Pedestrian Fatalities, 1980-2022



*Projected

Source: FARS and GHSA analysis of SHSO data, Governor's Highway Safety Association

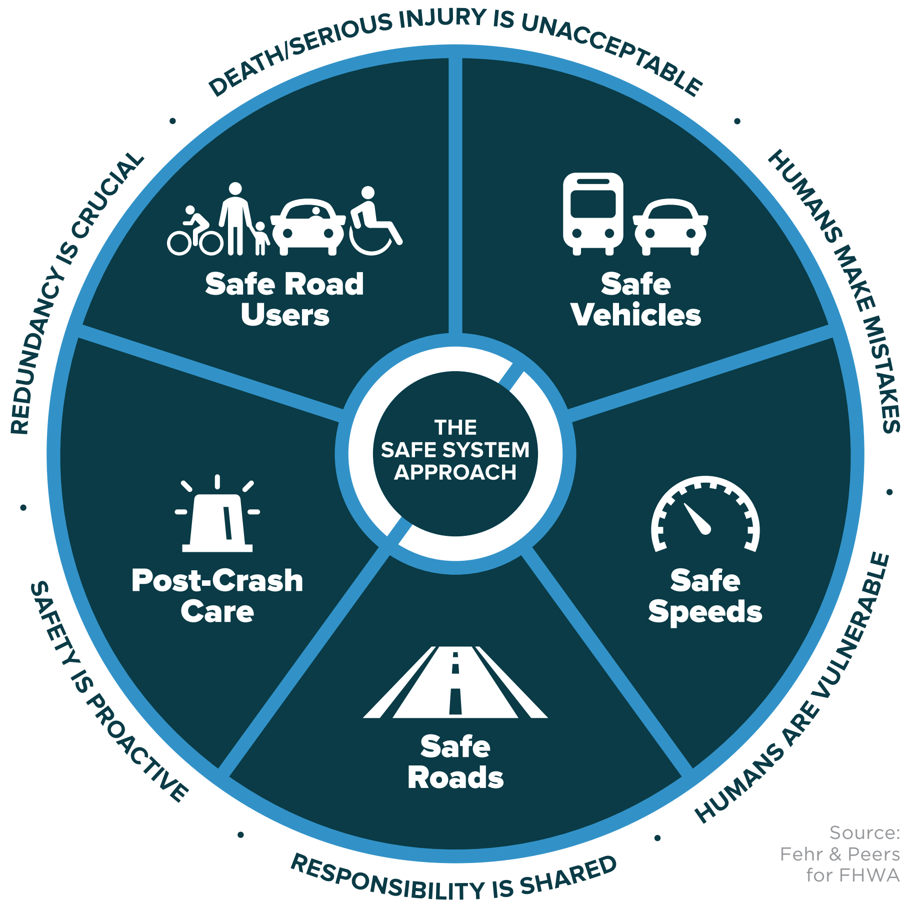
Vision Zero

In 2015, Los Angeles was an early adopter of Vision Zero in the United States. Since that time, the popularity of the movement has grown nationwide. Vision Zero plans have been created across 30 states, with many policymakers motivated following the recent significant increase in traffic fatalities. In recent years, cities like Fremont, CA and Jersey City, NJ, have achieved significant reductions in severe injuries and fatalities as a result of their Vision Zero efforts. Caltrans recently committed to a statewide goal of zero fatalities on state highways by 2050. Federally, the US Department of Transportation (USDOT) adopted the National Roadway Safety Strategy (NRSS) in 2022.

Safe System Approach

To achieve Vision Zero goals, the Safe System Approach has gained traction nationally as the best practice framework for roadway safety work. The approach comprises five design elements – safe road users, safe vehicles, safe speeds, safe roads, and post-crash care – all of which support and interact with one another. Additionally, the approach promotes six principles to create a safe roadway system – seen on the outer ring of the Safe System "wheel." Embedded in this approach is anticipating human mistakes by designing and managing road infrastructure to keep the risk of mistakes low; and, when a mistake leads to a crash, the result is not a fatality or serious injury.

For jurisdictions adopting this framework, Vision Zero remains the goal and the Safe System Approach provides a roadmap for achieving that goal, providing the framework for the City of Los Angeles as well.



Source: Fehr & Peers for FHWA

The Safe System Approach serves as the foundation for federal programs like USDOT's National Roadway Safety Strategy, the updated national Manual on Uniform Traffic Control Devices (MUTCD), and the Safe Streets for All (SS4A) grant program. It also serves as the basis for the Caltrans Strategic Highway Safety Plan.

Vision Zero Community Activation by LA Walks, Gabba Gabba Gallery, Pilipino Workers Center, and Public Matters - June 2017

Other State and Federal Roadway Safety Programs

Having an updated comprehensive safety plan is now required for eligibility for certain State and Federal implementation safety funding. California's Local Highway Safety Improvement Program (HSIP) requires a Local Road Safety Plan (LRSP) be in place and updated regularly in order to compete for funds. Similarly, the new Safe Streets and Roads for All (SS4A) grant program, initiated as part of the 2021 Bipartisan Infrastructure Law (BIL)/ Infrastructure Investment and Jobs Act (IIJA) requires a Comprehensive Safety Action Plan (CSAP) in order to compete for implementation dollars. This study helps the City of Los Angeles remain current in its eligibility for these programs. Los Angeles has been awarded millions of dollars in implementation funding through HSIP, including as part of the latest funding cycle, and the City was awarded $9 million in SS4A implementation funding during the 2022 funding cycle.

Recent CA Roadway Safety Legislation

To advance roadway safety beyond funding contributions and infrastructure improvements, California legislators have recently passed two landmark roadway safety-related policies.

AB 645: Speed Safety Camera Pilot

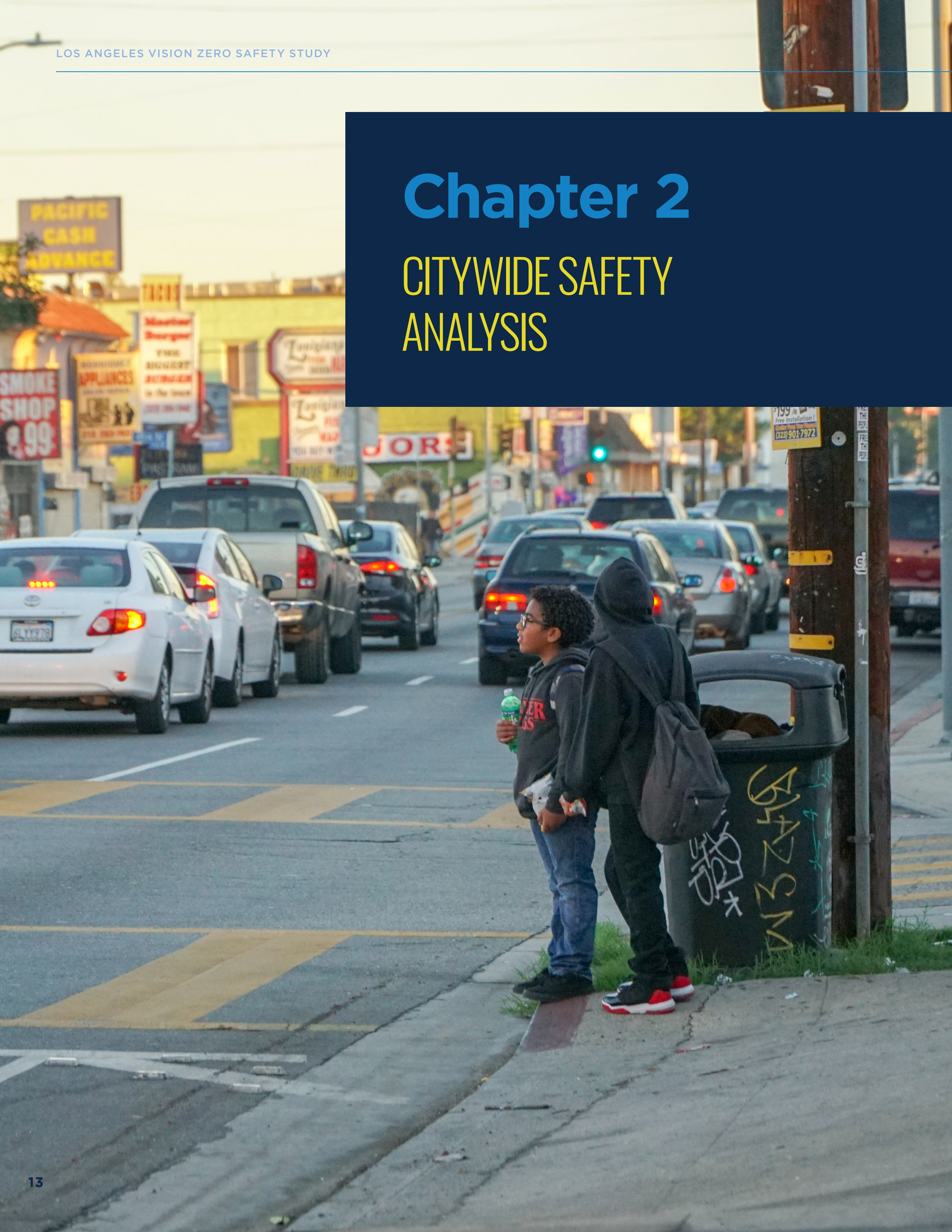
In October 2023, Governor Newsom signed Assembly Bill 645 (Friedman) into law, allowing the use of speed cameras in six California cities (San Francisco, Los Angeles, San Jose, Oakland, Glendale, and Long Beach). AB 645 allows cameras to capture images of the rear license plate of vehicles traveling 11 miles per hour or more over the posted speed limit. AB 645 presents an important opportunity for Los Angeles to participate in the pilot speed camera program. Managing vehicle speed is considered the most important factor in reducing the severity of traffic collisions, and speed camera systems have been demonstrated to be highly effective. For example, in New York City speeding at camera locations dropped an average of **73%.**

AB 43: Speed Limit Setting Flexibility

In October 2021, Governor Newsom signed AB 43 (Friedman) into law, giving local lawmakers greater power to set speed limits based on road safety as opposed to prevailing speed and road conditions. The law gives jurisdictions the authority to lower speed limits in business districts, and on designated Safety Corridors, among other location types. This law allows for an important strategy that LADOT can use in conjunction with roadway design changes to help lower vehicle speeds and reduce collision severity. Los Angeles has already begun AB 43 implementation, with 5 mph reductions on **177 miles** of streets across **77** segments, including **28** segments on the High Injury Network.

Chapter 2

CITYWIDE SAFETY ANALYSIS



This chapter summarizes the key findings from the collision landscape analysis and systemic analysis, with a focus on equity considerations, Council District trends, and trends related to COVID-19 shutdowns and changes in travel behavior. The collision landscape summary extracts insights by directly evaluating collision records. The systemic analysis builds on the landscape summary by identifying key roadway characteristics and other contextual risk factors related to severe and fatal collisions occurring in Los Angeles.

About the Data

Collision Data

Collision data was collected from the City's RoadSafeGIS database for the full years 2017 through 2021. Data was cleaned and compared with Statewide Integrated Traffic Records System (SWITRS) and LAPD data to develop the most comprehensive dataset as possible. Due to data cleaning and geocoding, a subset of collisions from the original database was used for this analysis, accounting for 99% of KSI collisions in the City's database.

Roadway and Contextual Data

Roadway and contextual data, such as intersection control, roadway classification, school and park locations, and transit stops were provided by LADOT or available through other public sources (e.g. LA County, Metro). A specific search radius was applied to each variable in order to determine a geographic relationship with collisions (e.g. collisions within 1,000' of a park boundary are considered to be "near a park").

Big Data Sources

This analysis uses the following big data sources to create the following contextual data layers that can be compared against geographic collision trends:

StreetLight location-based data:

- Average Weekday Average Daily Traffic (ADT) – May 2022 through April 2023
- Top Bicycle and Pedestrian Activity Centers (based on trip starts and ends by block group for all days) – September 2021 through April 2022

Wejo connected vehicle data:

- Driver incidents (hard braking and acceleration) – October 2022
- 85th percentile vehicle speeds – October 2022

2017 Safety Study

Throughout the document there are references to the "2017 Safety Study." The 2017 Safety Study was based on data from 2009 to 2013. Direct comparisons to the 2017 Safety Study were only made in cases where we had relative certainty in comparing apples-to-apples, based on the methodology. Comparisons that involve uncertainty about methodology are noted.

Killed or Severely Injured in a Collision (KSI)

Severe injuries resulting from a traffic collision can result in a number of catastrophic impacts, including permanent disability, lost productivity and wages, and ongoing healthcare costs. These injuries can include:

- Broken or fractured bones
- Dislocated or distorted limbs
- Severe lacerations
- Severe burns
- Skull, spinal, chest or abdominal injuries
- Unconsciousness at or when taken from the collision scene

Throughout this analysis, the acronym KSI is used to denote collisions where someone was killed or severely injured.

Collision Landscape Summary

This summary uses collision data to identify demographic, behavioral, and temporal trends of collisions. The key takeaways cover collision severity, DUI-involved KSI collisions, lighting conditions, primary violation types, collisions with unsafe speed, pedestrian actions, collision types, party actions in vehicle-only KSI collisions, and time of day.

INCLUDED IN THIS SECTION:

- LAPD Reported Fatalities
- KSI Collisions
- All Injury Collisions
- DUI-Involved Collisions
- Primary Violation Type
- Unsafe Speed
- Pedestrian Actions
- Collision Type
- Party Actions
- Hit-and-Runs
- Lighting Conditions
- Time of Day
- Time of Day and Month

LAPD Reported Fatalities

LAPD reported traffic fatalities is the only data in this study that is sourced directly from the LAPD. The remainder of the analysis is based on collision data provided by LADOT via their RoadsafeGIS database. Due to data cleaning and geocoding, a subset of collisions from the original database was used for this analysis, accounting for 99% of KSI collisions in the City's database.

On average, the following fatalities occurred each year between 2017 and 2021:

132 pedestrian | **18** bicyclists | **73** drivers | **31** motorcyclists

Between 2017 and 2021, annual traffic fatalities increased by approximately 20%, from **246 to 294 collisions**.

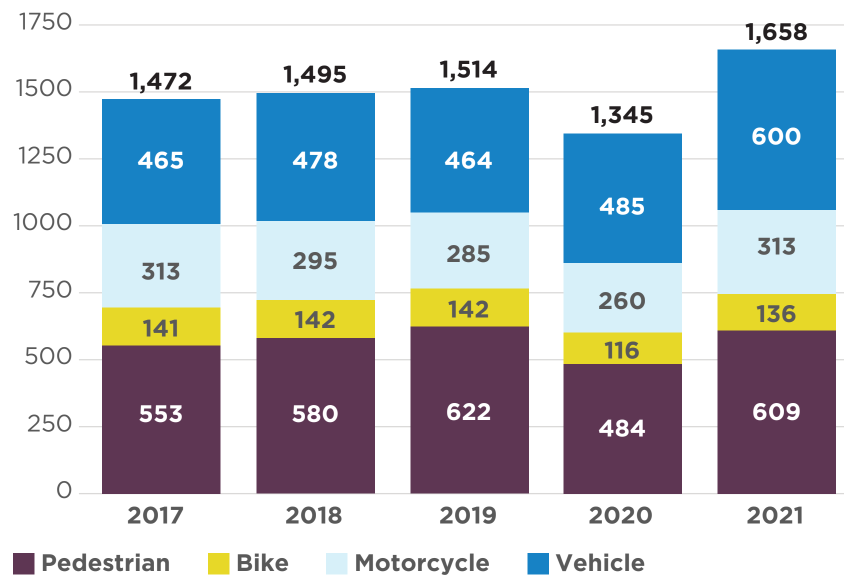
As reported by the Los Angeles Police Department (LAPD)

KSI Collisions

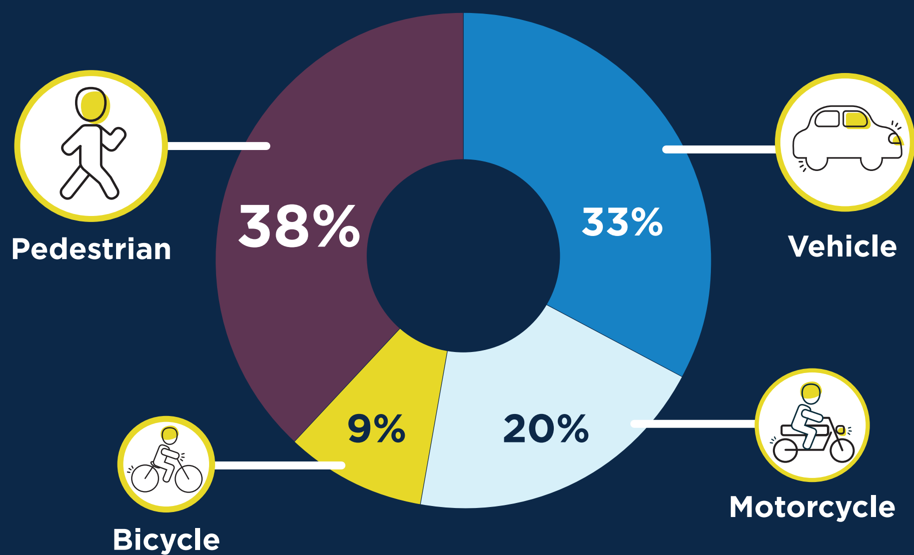
Between 2017 and 2021, there were 7,484 KSI collisions, an average of 1,497 KSI collisions per year.

KSI collisions have been on the rise, increasing by approximately 13% between 2017 and 2021.

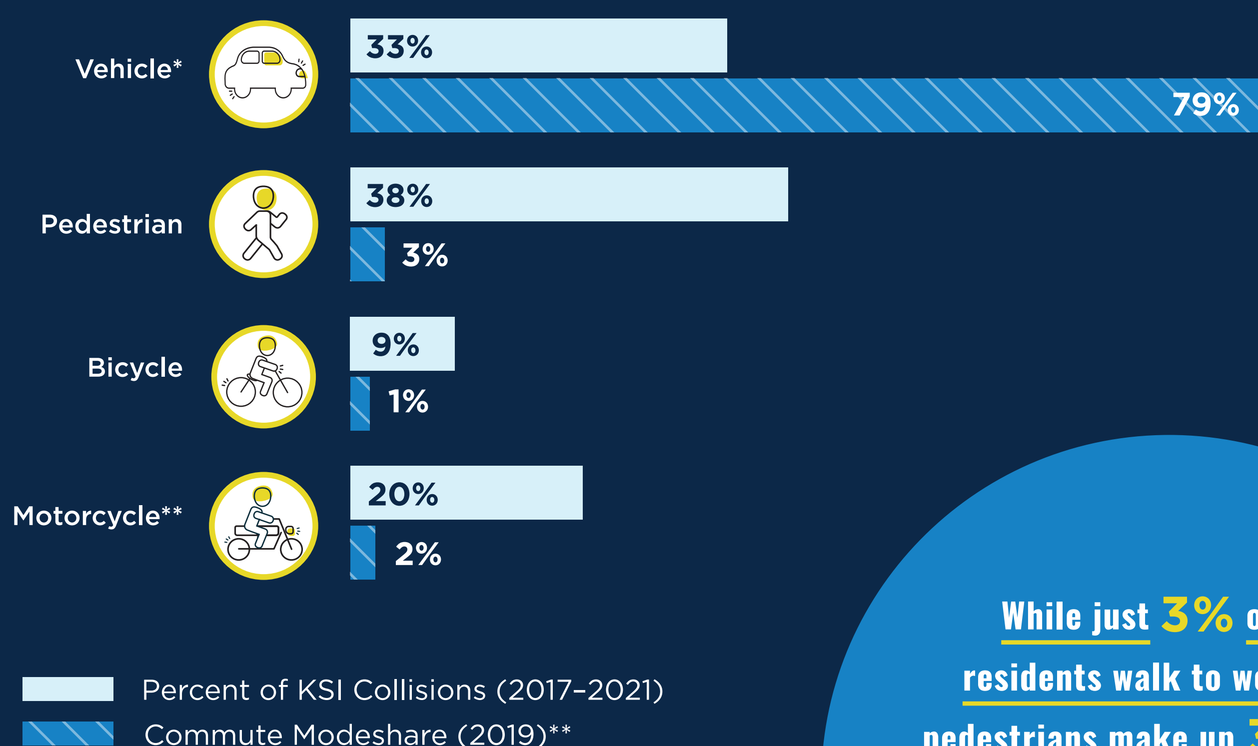
KSI Collisions by Year and Mode, 2017-2021



Share of KSI Collisions by Mode



Pedestrian KSI collisions increased 53% citywide in the 2017–2021 period from 2009–2013 levels



*Includes drove alone and carpool commutes
**Commute data includes taxi and other modes

While just 3% of residents walk to work, pedestrians make up 38% of KSI collisions

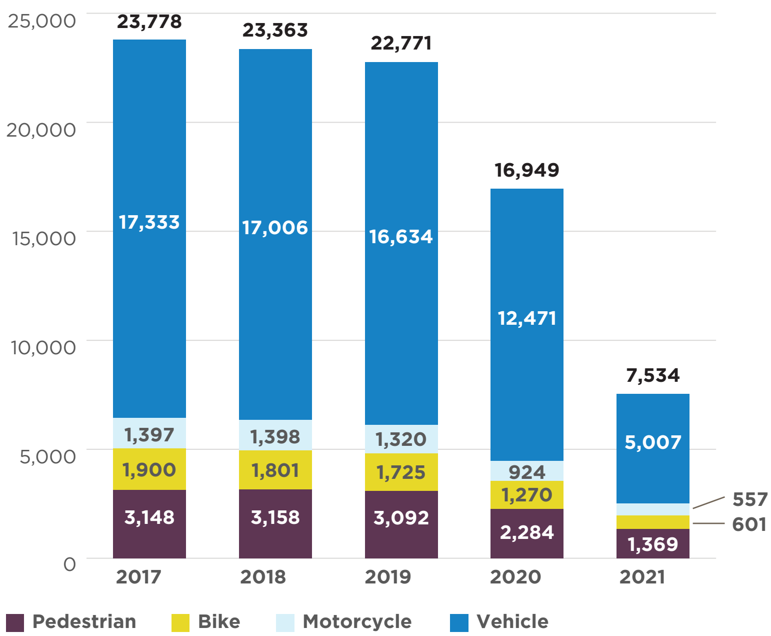
All Injury Collisions

Between 2017 and 2021, the number of injury collisions decreased 68%. The decrease in collisions in 2021 was primarily due to the change in LAPD collision response practices.

Beginning on January 1, 2021, LAPD collision reporting methodology required parties to self-report lower-severity collisions that did not involve a hit-and-run or DUI through the City's online police report portal. Prior to this methodology change, traffic officers were required to file these reports. This change has resulted in fewer recorded collisions, which is reflected in chart below for 2021.

Between 2017 and 2019 —prior to COVID-19 and the new LAPD collision reporting methodology —there were **69,912 collisions**, an average of 23,304 per year.

All Injury Collisions by Year and Mode, 2017-2021



Note: Collisions involving multiple modes are assigned to the "highest vulnerability" mode (e.g. pedestrian-bicycle collisions are assigned as pedestrian) so that collisions are not double-counted throughout the Annual Collision Trends section.

REPORTING BIAS IN COLLISION DATA

In roadway safety research, collision databases have been found to have certain reporting biases, including:

- Collisions involving people walking, on bicycles, or on motorcycles are less likely to be reported than collisions with people driving
- Younger victims are less likely to report collisions
- Alcohol-involved collisions may be underreported

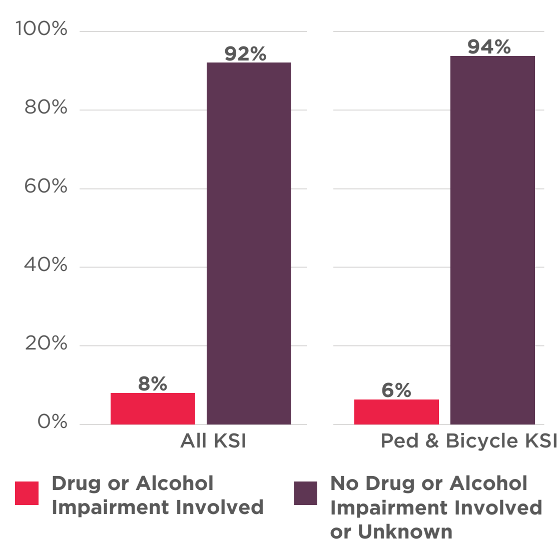
Race, income, immigration status, and English proficiency may also impact reporting, but there is limited research on these factors.

DUI-Involved KSI Collisions

Drug or alcohol impairment involvement in pedestrian and bicycle KSI collisions have remained the same since the 2017 Safety Study at around 6% of KSI collisions.

From 2017-2021, **approximately 8%** of all KSI collisions involved drug or alcohol impairment.

DUI-Involved KSI Collisions, 2017-2021



Note: For collisions that involved a bicyclist or pedestrian, the impaired individual could have been a vehicle driver and/or the pedestrian and bicyclist.

Primary Collision Factor

Primary Collision Factor (PCF) violation category codes are not always intuitive. Select violation types are described below.

VEHICLE RIGHT-OF-WAY VIOLATION

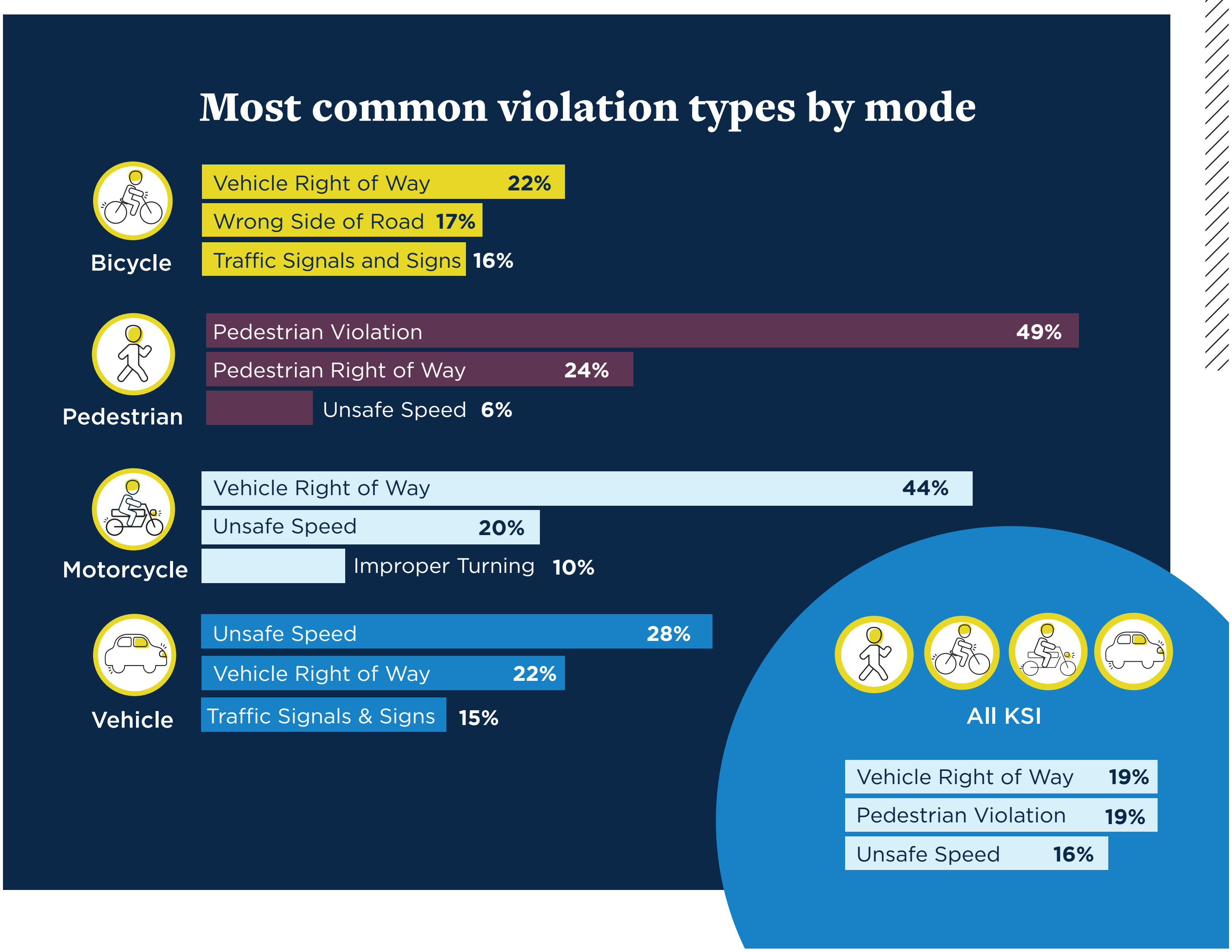
Covers a party (of any mode) not yielding to the driver's right-of-way or the driver observing his or her right-of-way improperly. A common citation under this category is for drivers who do not yield to oncoming traffic during a left turn or U-turn. Other citations include not yielding properly at a stop sign and not yielding when entering a road from a property. While the title specifies vehicle, a vehicle hitting a person on a bicycle or not yielding to pedestrians for right turns on red can also be cited.

PEDESTRIAN RIGHT-OF-WAY VIOLATION

Covers drivers violating a pedestrian's right-of-way. A common citation is for drivers not yielding at a crosswalk. It also includes drivers not yielding to a pedestrian on a sidewalk, such as at a driveway.

PEDESTRIAN VIOLATION

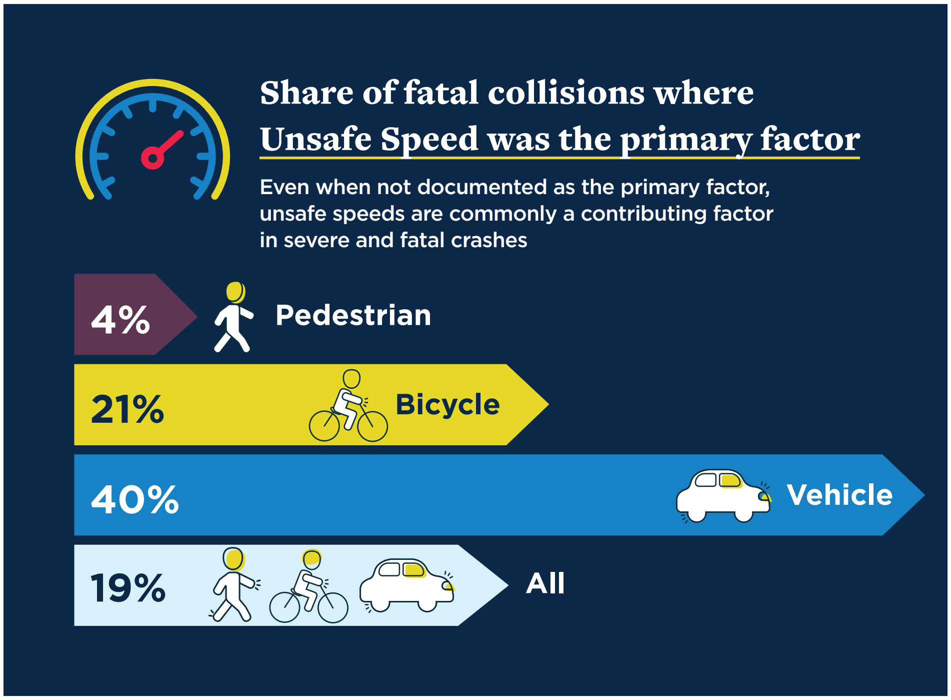
Covers pedestrians not following a rule of the road. In 2022, the Freedom to Walk Act (AB-2147) was passed, which allows people to cross outside of an intersection without being ticketed, provided there is no immediate danger. Prior to AB-2147, a pedestrian violation would be cited if a pedestrian was crossing outside of a crosswalk, not yielding to vehicles, or crossing during the flashing "Don't Walk" or red phase of a signal.



Unsafe Speed

Unsafe Speed is the primary collision factor in 40% of vehicle-only collisions that resulted in a fatality. Even in collisions where Unsafe Speed is not the primary violation type, speed is almost always a factor in severe and fatal collisions. For example, the primary collision factor in a pedestrian collision is often coded as Pedestrian Violation or Pedestrian Right-of-Way Violation, but vehicle speed is a key factor in collision severity. Speed at the time of the collision may be hard to determine due to lack of witnesses and hit-and-runs.

According to USDOT, a person hit by a driver traveling at 23 mph has a 90% chance of survival. A person hit by a driver traveling 42 mph has only a 50% chance of survival (Accident Analaysis & Prevention, *Impact Speed and a Pedestrian's Risk of Severe Injury or death,* July 2012).

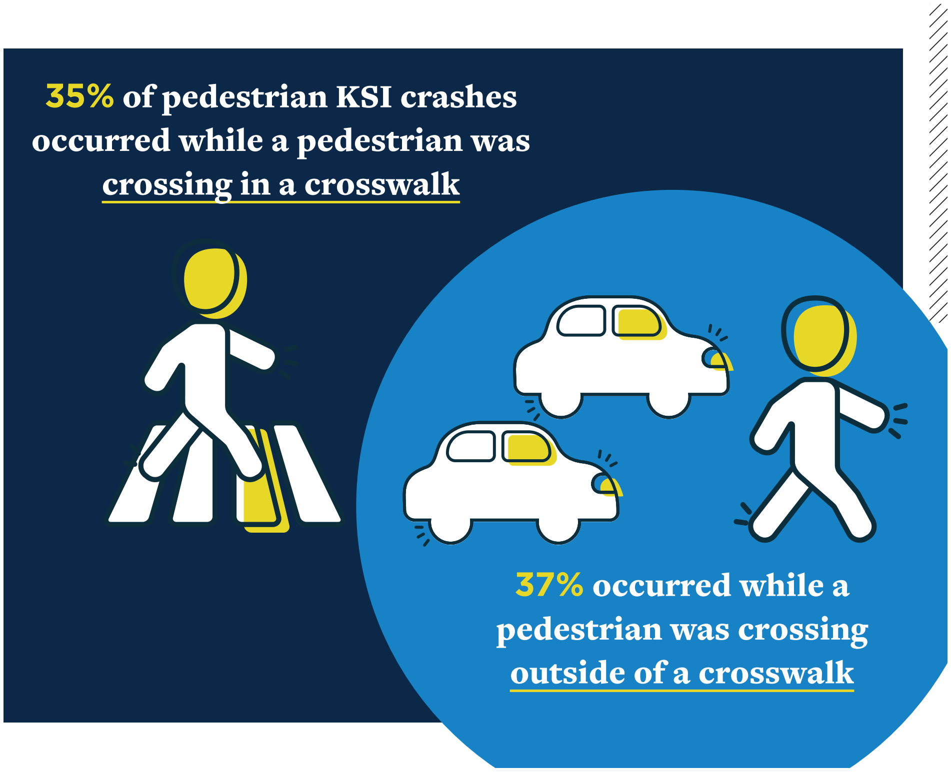


Note: If the reporting officer determines that speed was a collision factor – though not the primary collision factor – they may note it on the crash report.

Pedestrian Actions

Crossing the road presents the greatest danger for pedestrians relative to other actions preceding KSI collisions.

Nearly **75%** of pedestrian-involved KSI collisions happened when a pedestrian was attempting to cross the road.

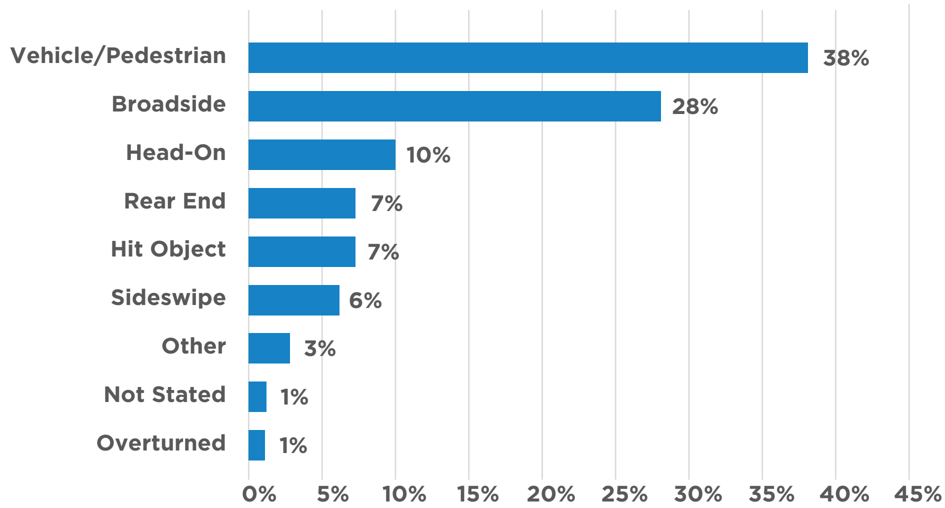


Note: The California Highway Patrol (CHP) handbook does not explicitly address marked versus unmarked crosswalks for actions prior to a collisions – other places in the handbook do make the distinction. LAPD training or the reporting officer's discretion determines how these characteristics are reported. For the purposes of this study, it is assumed "crosswalk" refers to marked crosswalks.

Collision Type

Vehicle/Pedestrian collisions was the top collision type for collisions that resulted in fatalities or severe injuries between 2017 and 2021. This trend has increased compared to the 2017 Safety Study, which reported that vehicle/pedestrian collisions accounted for 31% of KSI collisions.

KSI Collisions by Collision Type, 2017-2021

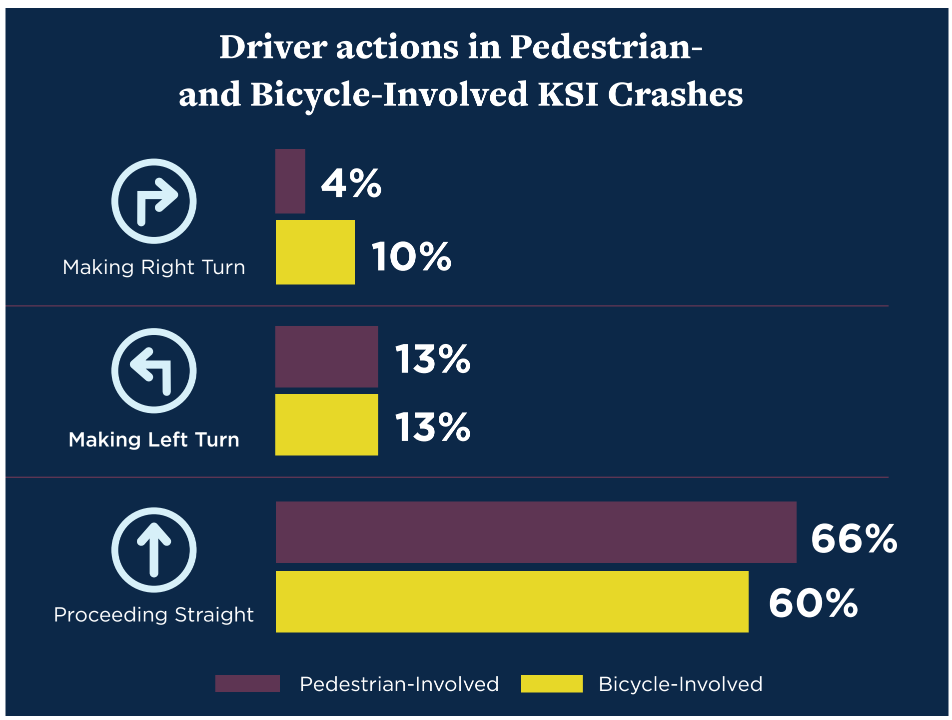


Party Actions

The majority of drivers in KSI bicyclist collisions were proceeding straight at the time of the collision. Approximately 23% of drivers were making a left or right turn at the time of the collision.

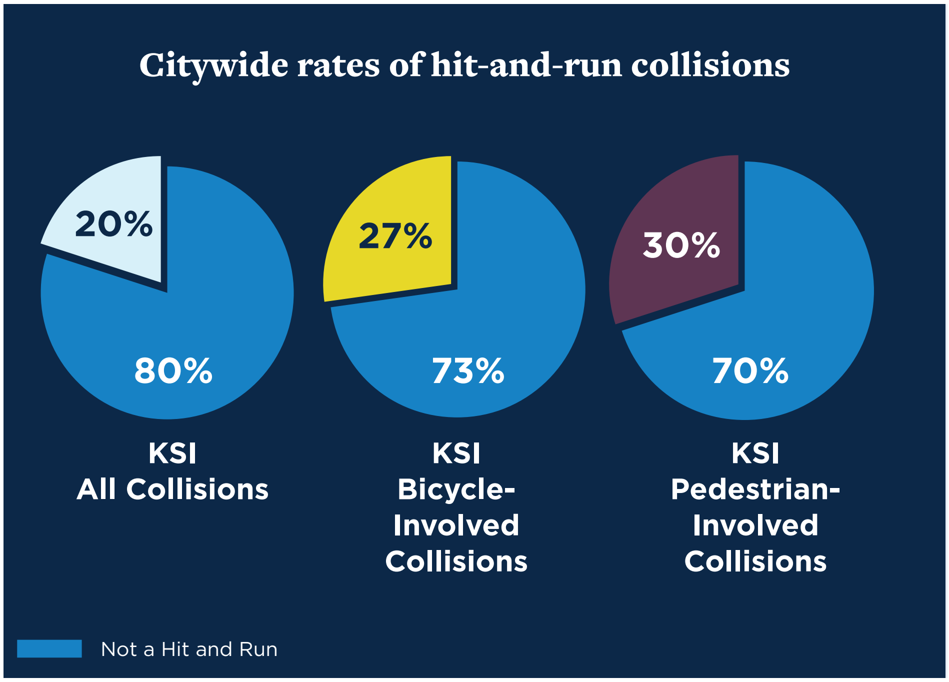
The majority of drivers – 66% – in KSI pedestrian collisions were proceeding straight at the time of the collision. This is a smaller percentage than in the 2017 Safety Study, which reported 71%.

Approximately 13% of drivers in KSI pedestrian collisions were making a left turn at the time of the collision, and 4% were making a right turn. The 2017 Safety Study reports the same approximate percentages.



Hit-and-Run Collisions

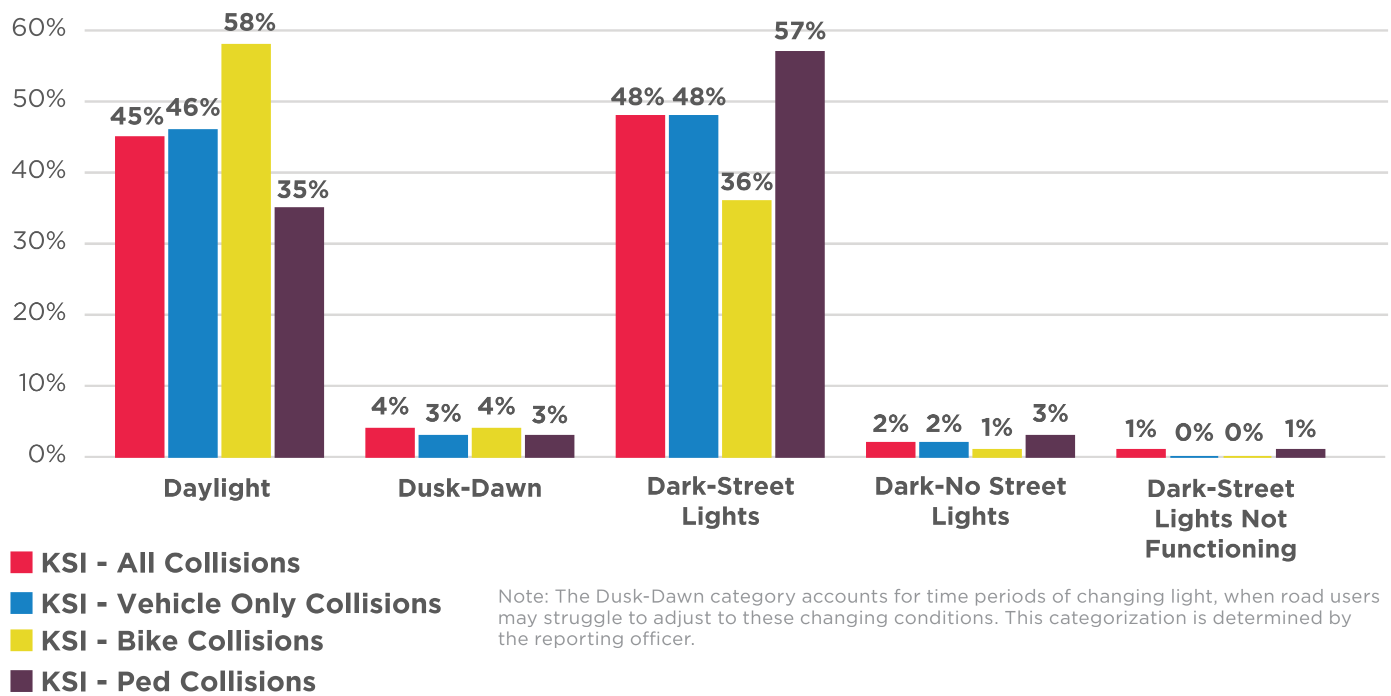
Approximately 20% of all KSI collisions were hit-and-run. This number is higher when people biking or walking are involved - 27% of bicycle-involved KSI collisions and 30% of pedestrian-involved KSI collisions were hit-and-run. These percentages have increased since the 2017 Safety Study, where hit-and-run collisions accounted for 18% of all collisions, and 22% of pedestrian and bike KSI collisions.



Lighting Conditions

Vehicle-only KSI collisions are approximately equally distributed between daylight and dark with street light conditions. Bike KSI collisions occurred more often in daylight conditions. Pedestrian KSI collisions occurred more often in dark with street light conditions relative to daylight conditions. While collisions occurring during dark conditions without functioning street lights accounts for a small share of collisions, the number of collisions in this category increased between 2017 and 2021.

KSI Collisions by Lighting Condition, 2017-2021

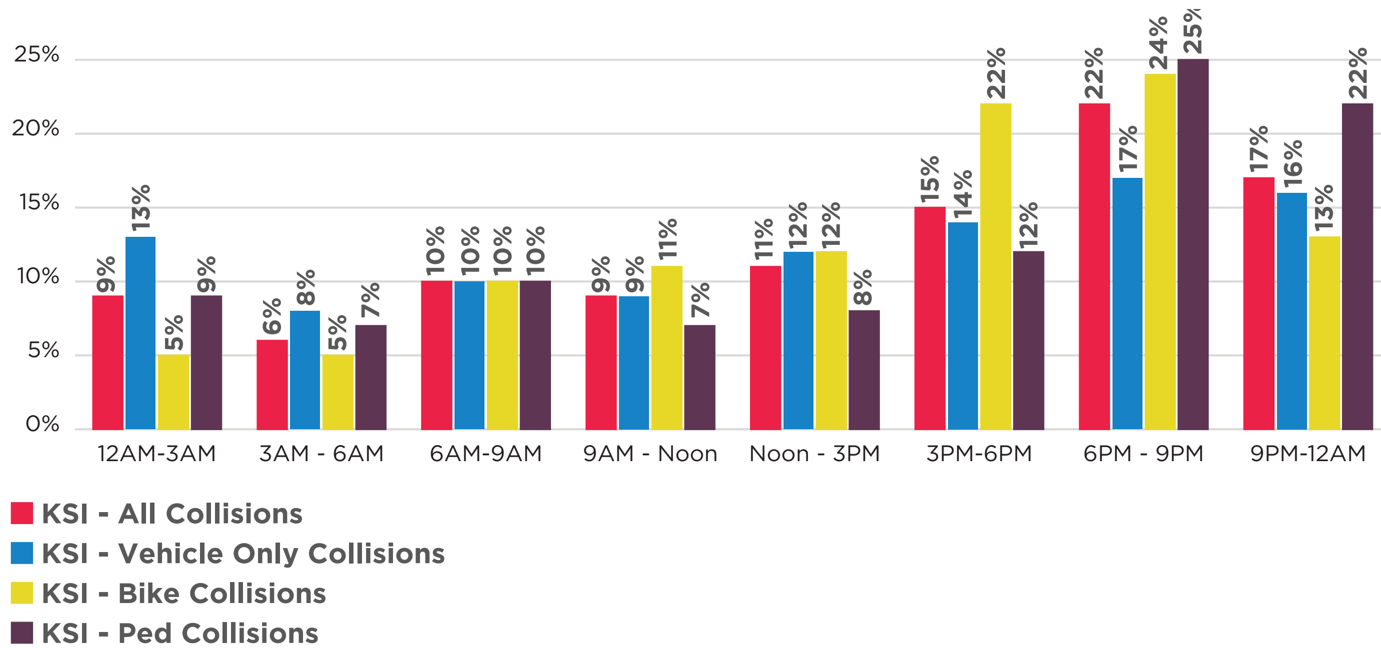


Note: The Dusk-Dawn category accounts for time periods of changing light, when road users may struggle to adjust to these changing conditions. This categorization is determined by the reporting officer.

Time of Day

The largest share of KSI collisions across all modes occurs between 6 and 9 PM. This trend holds true from the 2017 Safety Study. KSI pedestrian collisions also occur with high frequency between 9 PM and midnight, while KSI bicycle collisions tend to occur earlier, with 22% between 3 and 6 PM.

KSI Collisions by Time of Day, 2017-2021



Time of Day by Month

The chart below shows that collisions are not only concentrated in the latter part of the day, but they are also correlated with sunset times over the course of the year. Daylight Saving time changes during the study period occurred during the first week of November and in mid-March.

KSI Collisions by Month and Hour, 2017-2021

KSI Collisions

0-9	10-19	20-29	30-39	40-49	50-59	60-73

Lower — Higher

MONTH	12 AM	1 AM	2 AM	3 AM	4 AM	5 AM	6 AM	7 AM	8 AM	9 AM	10 AM	11 AM	12 PM	1 PM	2 PM	3 PM	4 PM	5 PM	6 PM	7 PM	8 PM	9 PM	10 PM	11 PM	SUNSET*
JAN	19	12	21	12	11	20	16	20	20	17	10	18	17	25	18	17	24	60	54	53	41	30	26	18	5:07
FEB	17	18	10	10	9	16	17	13	19	14	20	16	17	28	26	21	17	31	52	48	45	32	27	29	5:35
MAR	19	23	14	11	12	16	22	27	20	16	21	25	17	18	30	31	28	28	47	53	42	47	29	34	6:35
APR	22	17	14	12	6	12	8	13	17	21	16	18	37	24	33	27	26	31	39	39	41	44	29	27	7:23
MAY	19	30	27	15	8	11	16	16	18	12	13	22	27	19	20	19	30	29	37	20	40	39	39	33	7:46
JUN	30	17	17	13	7	19	5	21	18	16	18	26	15	31	25	26	30	26	36	23	47	56	40	26	8:03
JUL	23	24	24	10	14	7	17	23	23	19	25	11	23	14	29	25	31	36	34	28	48	69	36	34	8:01
AUG	24	20	16	11	10	19	14	18	17	23	19	17	23	20	17	18	30	36	52	5[illegible]	67	54	35	35	7:36
SEP	26	17	22	17	9	14	22	20	32	17	17	15	20	11	27	23	32	31	40	53	37	46	46	32	6:56
OCT	15	16	14	11	16	29	42	29	25	19	26	25	20	20	33	38	29	44	53	58	56	49	39	33	6:16
NOV	11	22	15	14	13	16	22	22	26	13	18	19	11	24	27	33	27	73	65	63	38	31	42	21	5:00
DEC	16	23	14	12	9	20	18	21	26	17	20	25	28	19	24	44	31	70	65	49	37	43	30	27	4:45

*Sunset time is the average for the month, 2021

Systemic Analysis

The systemic analysis uses contextual data to identify the roadway characteristics where collisions occur. Contextual data includes 85th percentile speed, weekday ADT, intersection characteristics, roadway classifications, council districts, Mobility Plan classifications, land use classifications, and disadvantaged communities indices. Furthermore, it relates these roadway geographical characteristics to the demographic, behavioral, and temporal collision trends identified in the landscape summary. Contextual data was derived from several sources – see **Appendix D** for more information.

INCLUDED IN THIS SECTION:

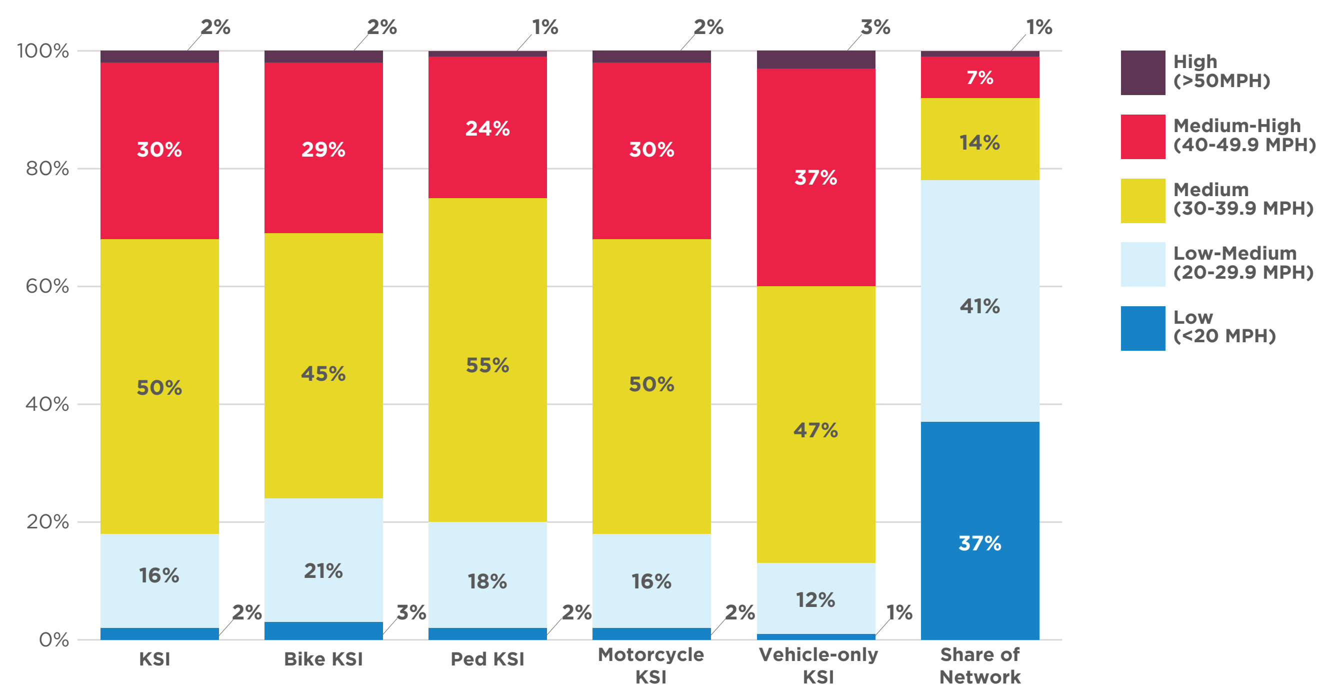
- 85th Percentile Speed
- Weekday ADT
- Intersection Control
- Roadway Classification
- Mobility Plan Designation
- Land Use
- Disadvantaged Communities
- Key Destinations

85th Percentile Speed

Roadways with 30-39.9 mph 85th percentile speeds make up 14% of the roadway network, but represent 45-55% of KSI collisions across all modes. 40-49.9 mph roadways make up 7% of the roadway network, but represent between 24-37% of KSI collisions across all modes.

KSI collisions occur disproportionately along roadways with observed 85th percentile speeds between 30 and 50 mph.

KSI Collisions by Observed 85th Percentile Speed of Street, 2017-2021



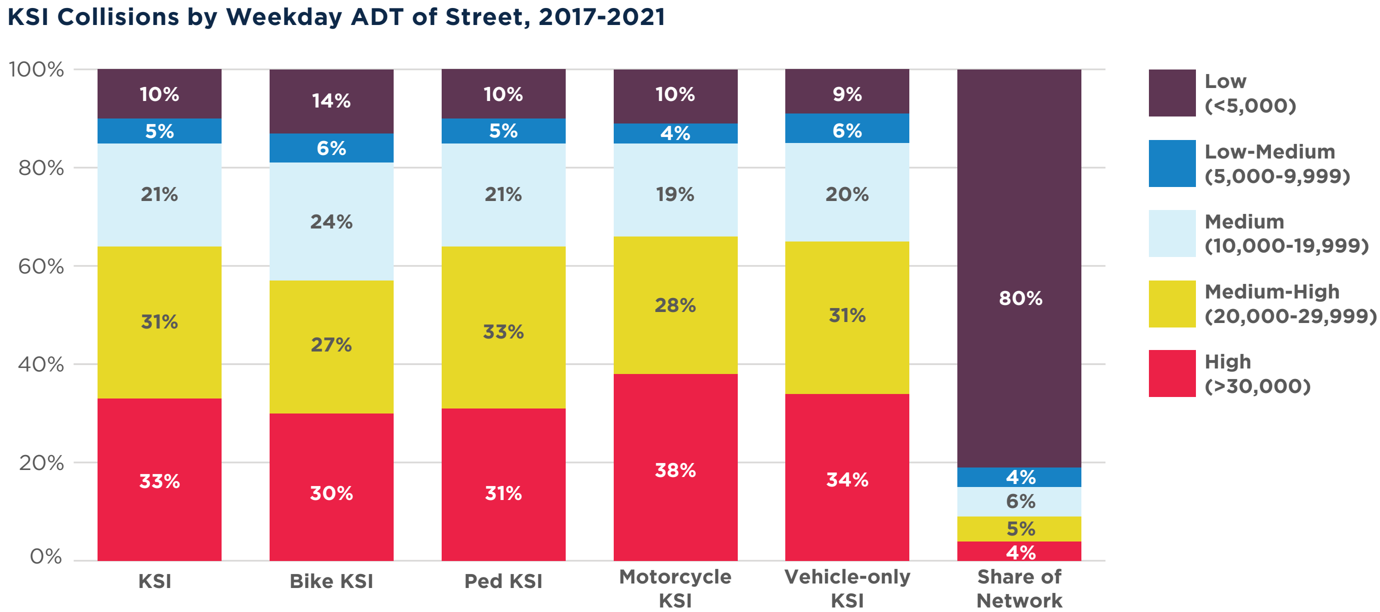
Note: 85th percentile speed data was sourced from Wejo connected vehicle data.

Weekday Average Daily Traffic (ADT)

Roadways with 10k+ ADT comprise approximately 15% of the roadway network; however, they represent approximately 80% of KSI collisions across all modes.

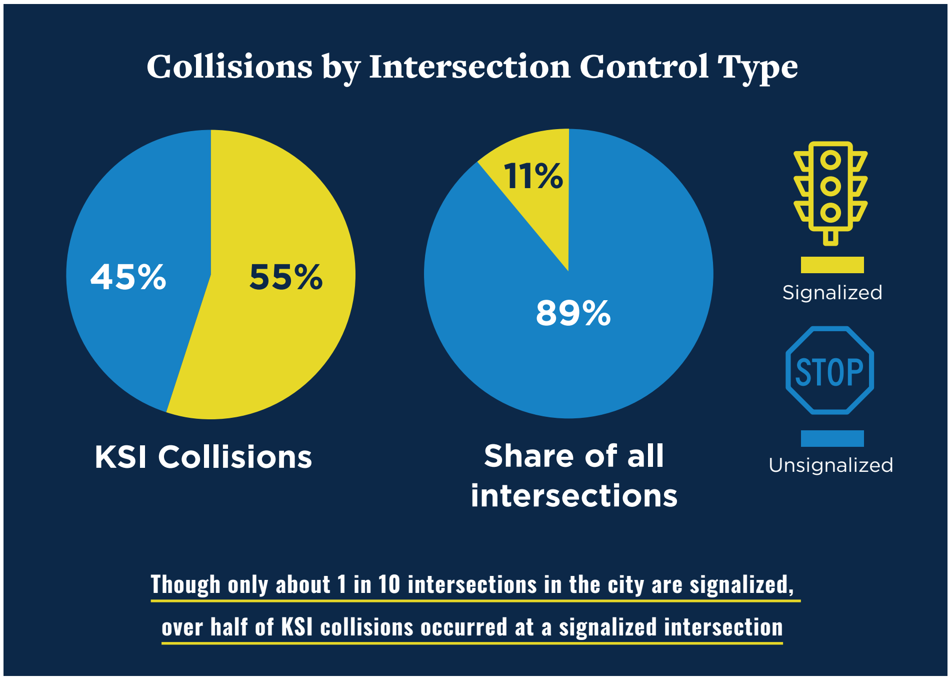
Higher ADT streets (10k+) also see a higher concentration of collisions happening at night, compared with lower ADT streets.

KSI collisions occur disproportionately on higher volume streets.



Intersection Control

KSI collisions occur disproportionately at signalized intersections compared to unsignalized intersections. Signalized intersections represent 11% of intersections, but account for more than 50% of KSI collisions across all modes.



Roadway Classification

Wider streets disproportionately represent KSI collisions compared to narrower streets. Wider streets, such as Boulevard II (≈80ft, 2-3 lanes in each direction), Avenue I (≈70 ft, 1-2 lanes in each direction), and Avenue II (≈56ft, 1-2 lanes in each direction), represent 19% of the roadway network, but account for 87% of KSI collisions across all modes.

Boulevards and Avenues make up 19% of streets in LA, but saw 87% of all KSI collisions

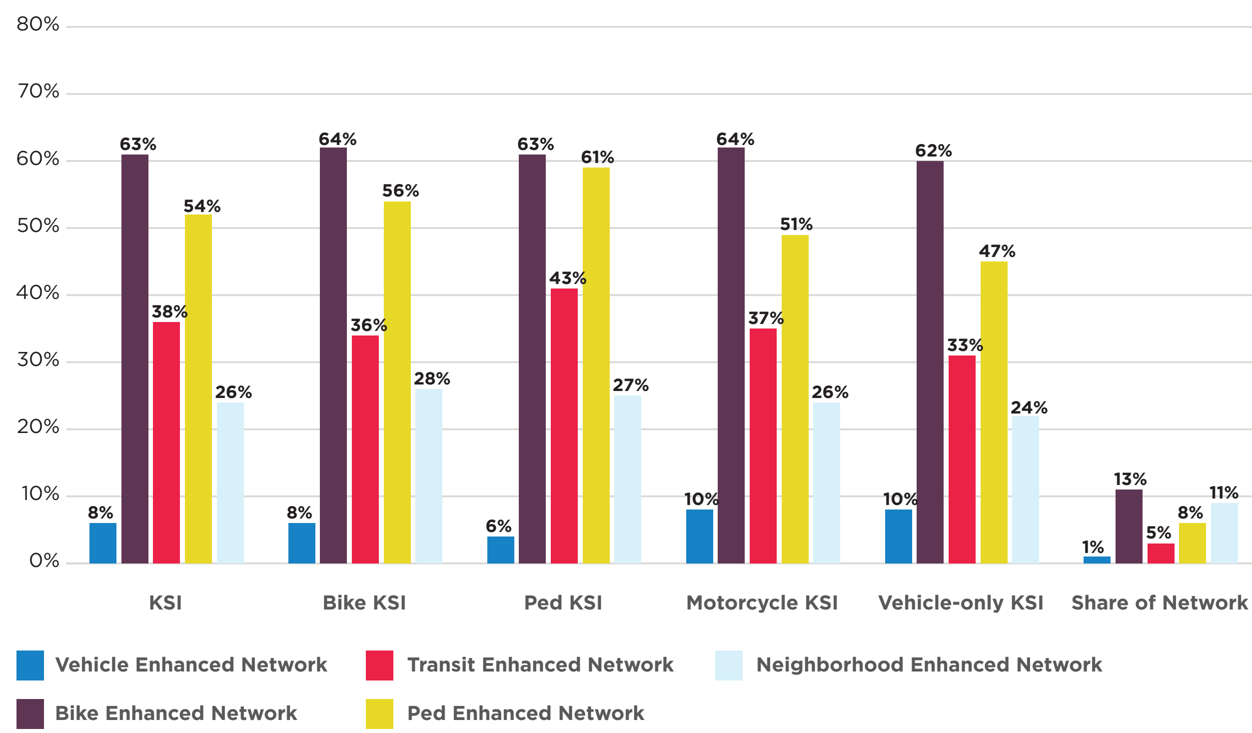
Local roads comprise 58% of the street network, but had only 6% of KSI collisions

Mobility Plan Designation

Streets designated as Pedestrian Enhanced Districts (PED) represent 8% of the roadway network, but account for 61% of all pedestrian KSI collisions. Relative to other modes, pedestrian KSI collisions occur disproportionately in designated Pedestrian Enhanced Districts.

63% of KSI collisions occur on streets designated as part of the Bike Enhanced Network (BEN) or Bike Lane Network (BLN). These streets account for 13% of the total network.

KSI Collisions by Mobility Plan Designation of Street, 2017-2021

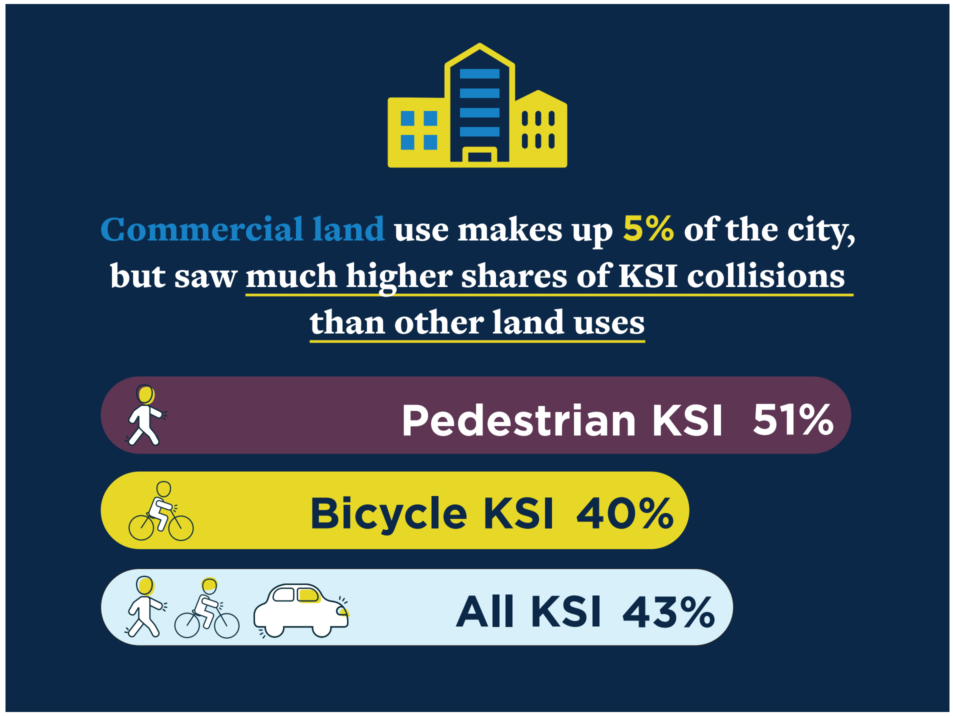


Note: Enhanced networks overlap (e.g. PED and BEN/BLN) - they are not mutually exclusive.

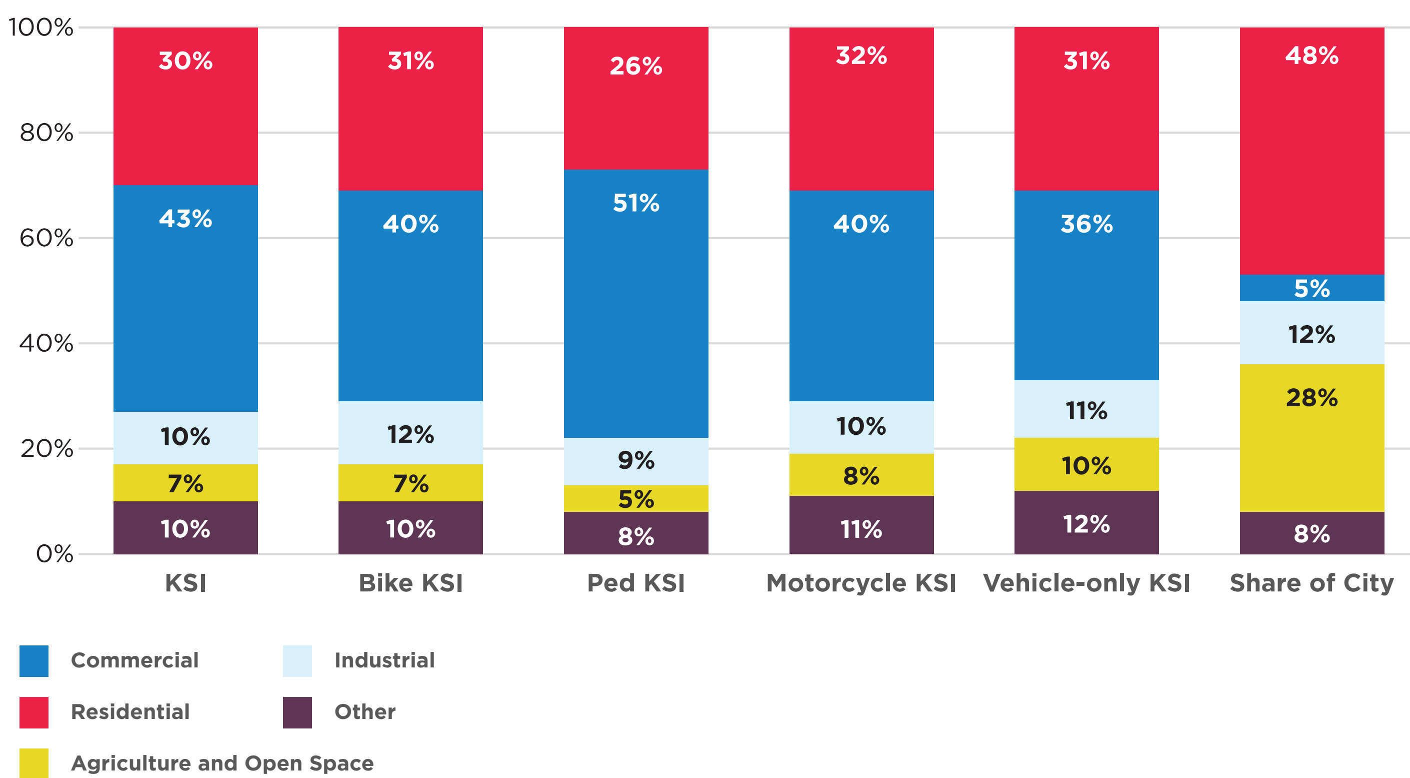
Land Use

Commercial land use accounts for the largest percentages of KSI collisions across all modes, relative to other land use types, but it represents just 5% of the land use adjacent to the roadway network. Over half of pedestrian KSI collisions occur adjacent to commercial land use.

Residential land use represents the most common land use type within Los Angeles, but accounts for 26-32% of KSI collisions across all modes.



KSI Collisions by Adjacent Land Use Classification, 2017-2021



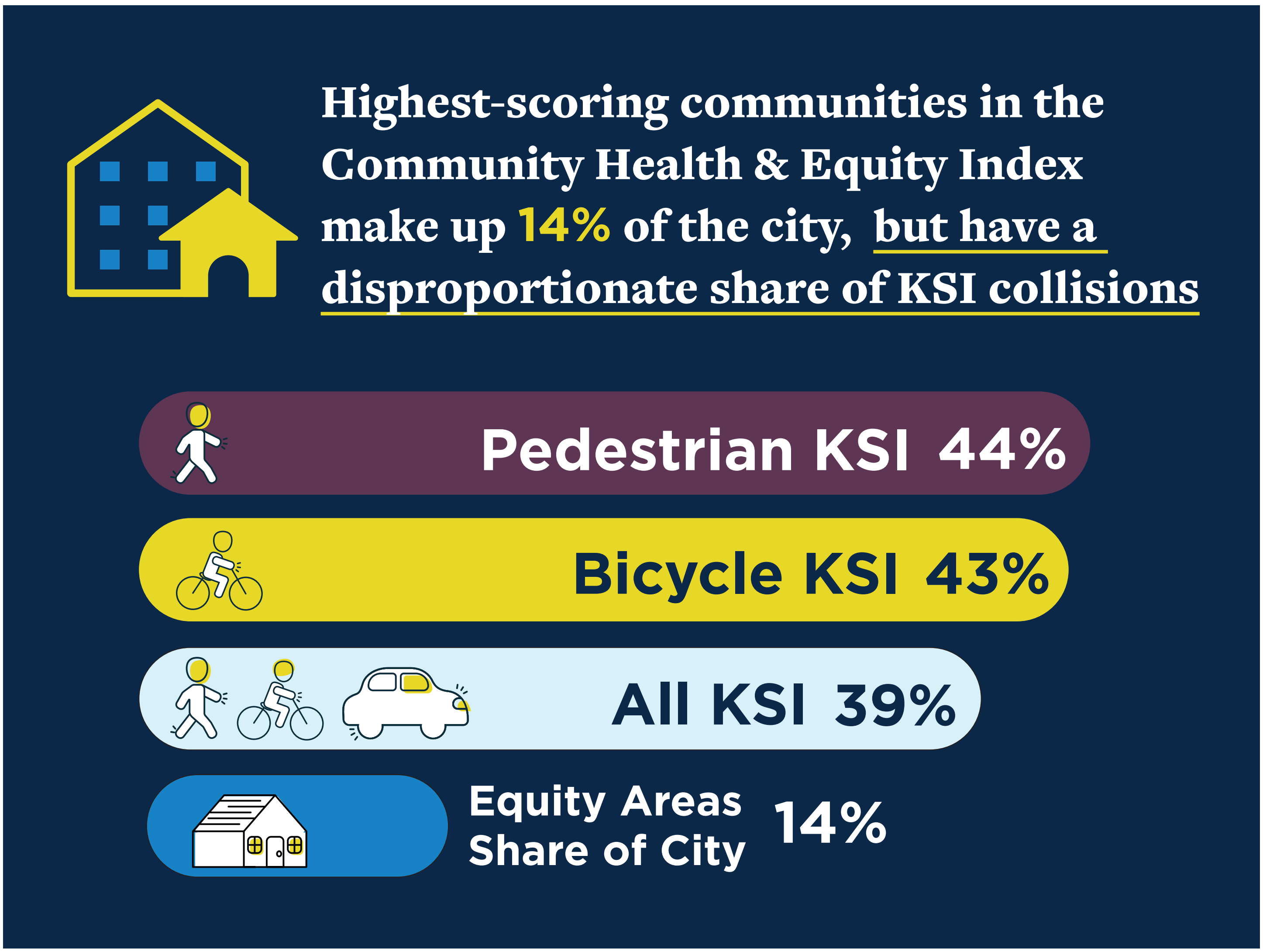
Disadvantaged Communities

Severe and fatal collisions occur disproportionately in Disadvantaged Communities.

This analysis examined three different Disadvantaged Community definitions:

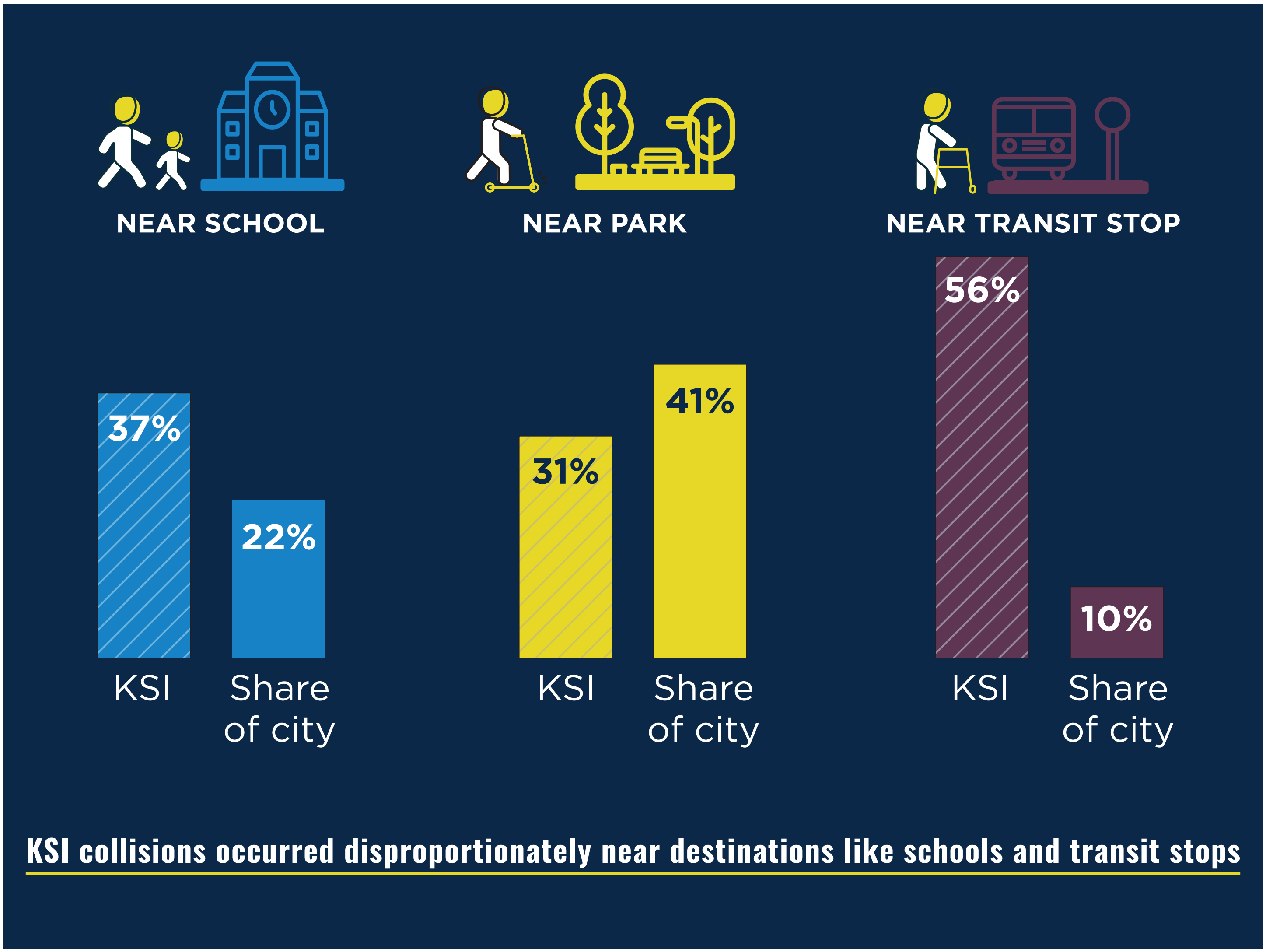
- Local: City of Los Angeles Community Health and Equity Index Top Quintile Areas
- State: CalEnviroScreen 4.0 Disadvantaged Communities
- Federal: USDOT Justice40 Disadvantaged Communities

For each definition, the share of KSI collisions occurring in Disadvantaged Communities was disproportionate to the share of the City land area that these communities account for.



Key Destinations

KSI collisions occur disproportionately near transit stops and schools, and at disproportionally lower rates near parks. Mode-specific KSI trends generally do not deviate from the overall KSI trend, but a larger share of pedestrian KSI collisions occur near schools when compared with other modes.



Note: Proximity was defined as follows - Schools: 1,000'; Parks: 1,000'; Transit Stops: 250' for bus stops, 1,000' for rail stations

LAPD RIPA Analysis

The LAPD Racial and Identity Profiling Act (RIPA) data was incorporated into the systemic analysis to illuminate how roadway safety is enforced, particularly with regard to the demographic information of people involved in traffic stops. The data is from the LAPD RIPA Dashboard and represents years 2018-2021.

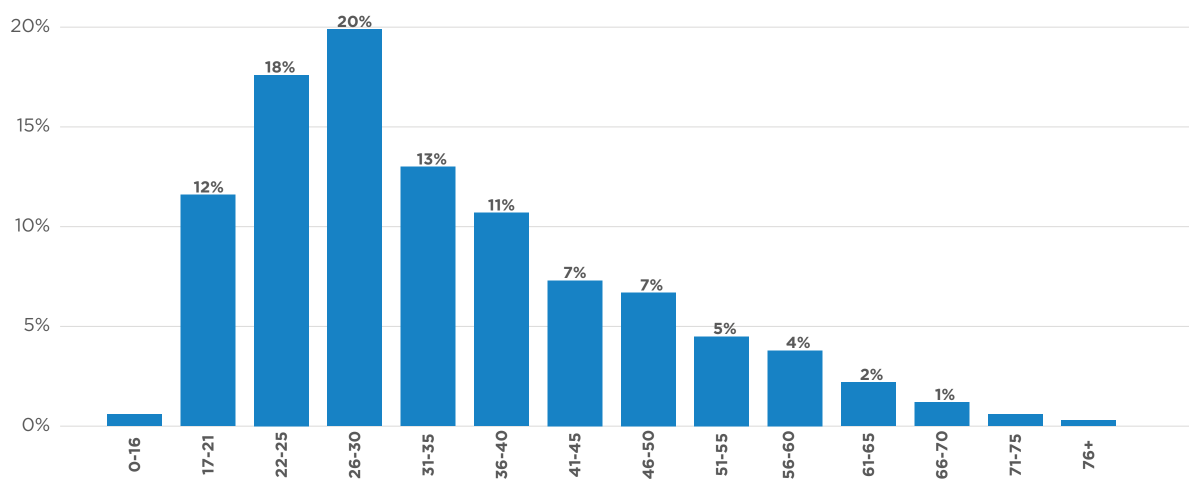
Gender

Men are involved in LAPD traffic stops nearly three times as often as women.

Age Group

LAPD traffic stops are concentrated among younger demographics, with age groups 17-30 representing nearly half of all traffic stops by the LAPD. The 26-30 age group bin represents the largest 5-year bin.

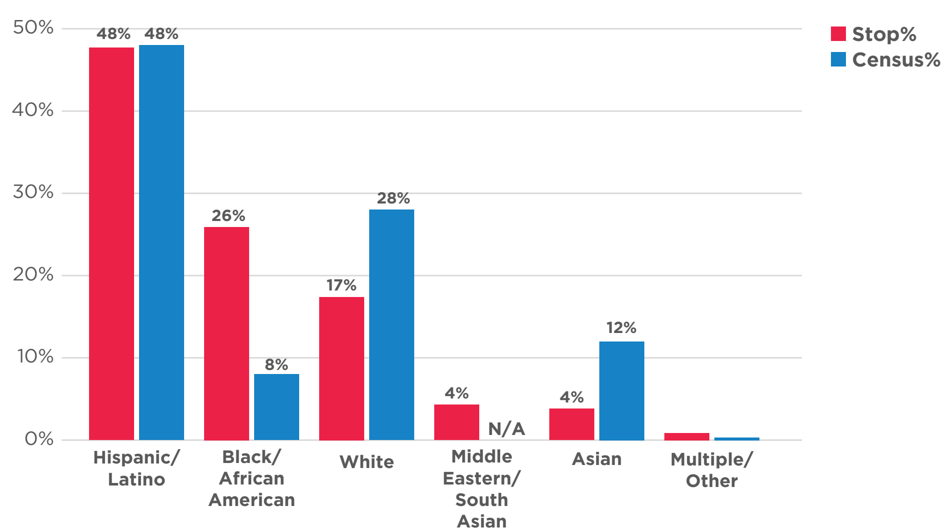
LAPD Traffic Stops by Age Group, 2018-2021

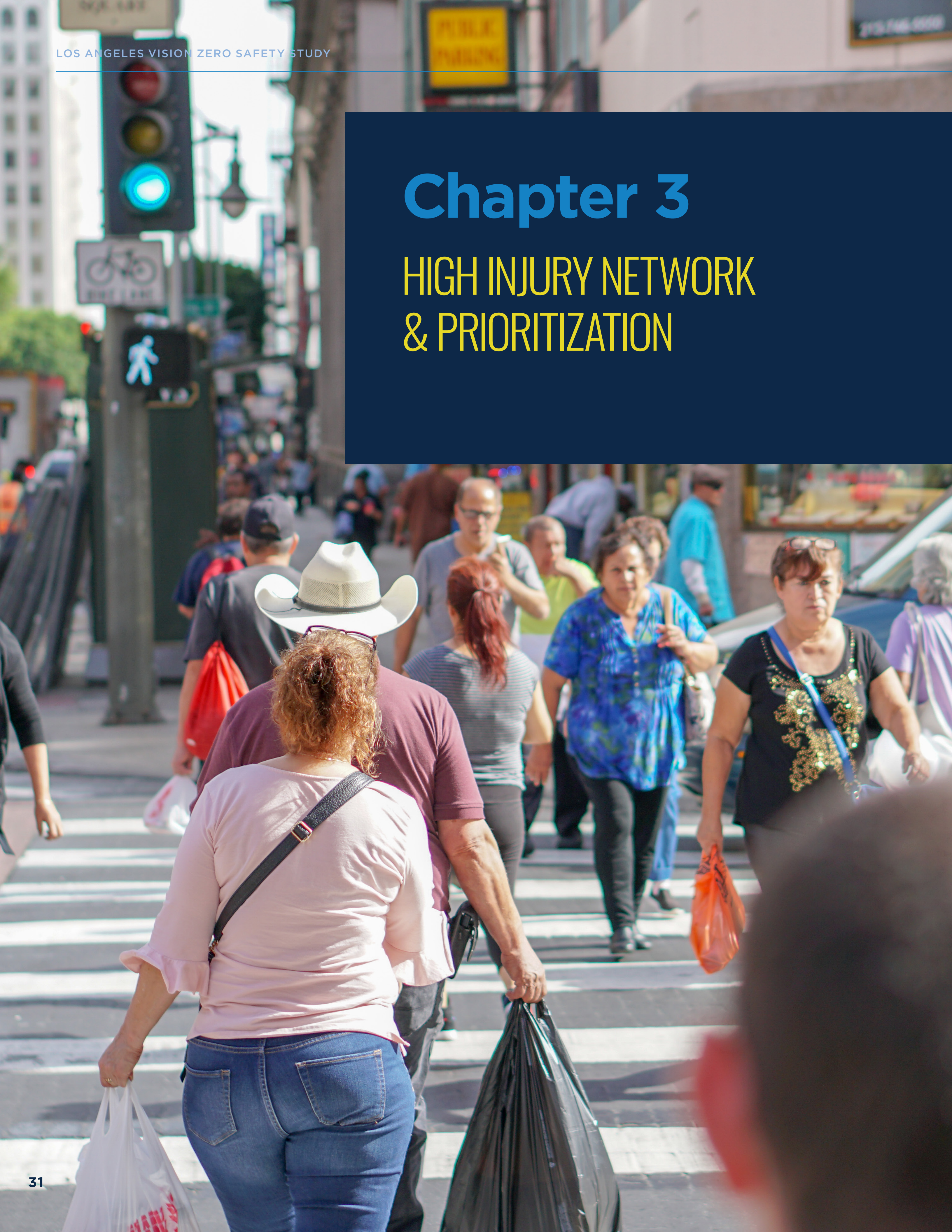


Race and Ethnicity

LAPD traffic stops by race/ethnicity are disproportionate relative to demographic composition. The Black/African American demographic accounts for approximately three times more LAPD traffic stops than their population proportion in the city.

LAPD Traffic Stops by Race & Ethnicity, 2018-2021





Chapter 3

HIGH INJURY NETWORK & PRIORITIZATION

In Los Angeles, a small percentage of streets account for a large share of the severe and fatal collisions. In 2016, the City created its first High Injury Network (HIN) to help decision-makers understand where efforts could be concentrated that would have the largest impact on safety outcomes. This study includes a new set of HINs that use newer collision data in combination with roadway and built environment risk factors to provide a new set of priority locations for the City.

HIN Process

The purpose of the HIN is to spotlight areas where collision-related severe injuries and deaths are concentrated, with an emphasis on vulnerable populations, which include people walking and bicycling as well as victim ages 65+ or 17 and under.

A new methodology was used to create the 2024 HINs, representing an evolution in roadway safety work since the first HIN was created for the City of Los Angeles in 2016. The methodology incorporates industry best practice for systemic and proactive roadway safety analysis. Roadway and other contextual factors that impact safety outcomes and take into account travel patterns are also scored as part of the HIN process. This is the first HIN update in Los Angeles since 2018.

Separate HINs were created for each of the following:

- All injury collisions
- Pedestrian injury collisions
- Bicycle injury collisions
- Motorcycle injury collisions
- Vehicle-only injury collisions

HIN contextual factors include:

- Equity emphasis areas
- Near schools and bus stops
- High bicyclist and pedestrian activity centers
- Roadways with high vehicle volumes, speeds, or designated truck routes

The HIN uses a 5-year collision dataset for 2017-2021 from the City's RoadSafeGIS database, and is supplemented by various contextual datasets.

To generate the HIN, collisions are scored separately from roadway segments and intersections. Collisions are given scores based on severity and the parties involved.

Roadway segments and intersections are scored based on contextual factors and the history of injury collisions.

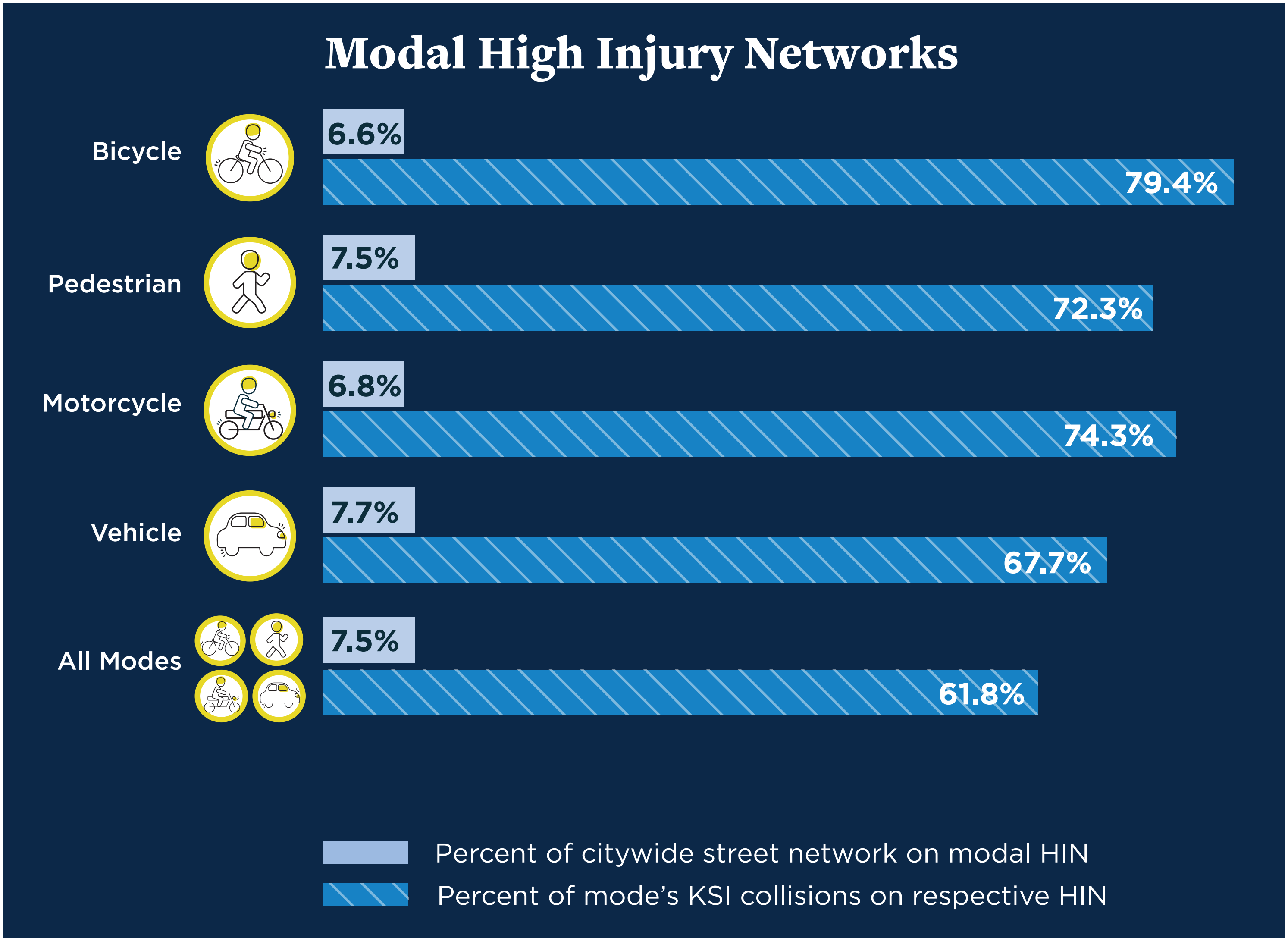
Collisions are then aggregated to segments and intersections, and cumulative scores are produced. See the summary table on the following page, and the HIN and Prioritization Memo for more details (**Appendix E**).

HIN Results

As a result of using a new methodology and evaluating new data, the updated All Modes HIN accounts for **549 miles** of roadway, which represents **7.5%** of the citywide roadway network and accounts for **61.8%** of KSI collisions in the City. Additionally, **32.6%** of the HIN falls within the City's equity emphasis areas (the top 20% of Census Tracts scored by the City's Health Atlas Community Health and Equity Index). See the graphic below and the following pages for details regarding the mode-specific HINs.

Prior HIN

The methodology used to create the HIN in 2016 (and then updated in 2018) relied only on historic collision data, and did not include contextual factors. Bicycle and pedestrian KSI collisions were weighted, but to a lesser extent than in the current methodology. The resulting HIN accounted for 65% of deaths and severe injuries, occurring on 6% of the street network (over 450 miles).



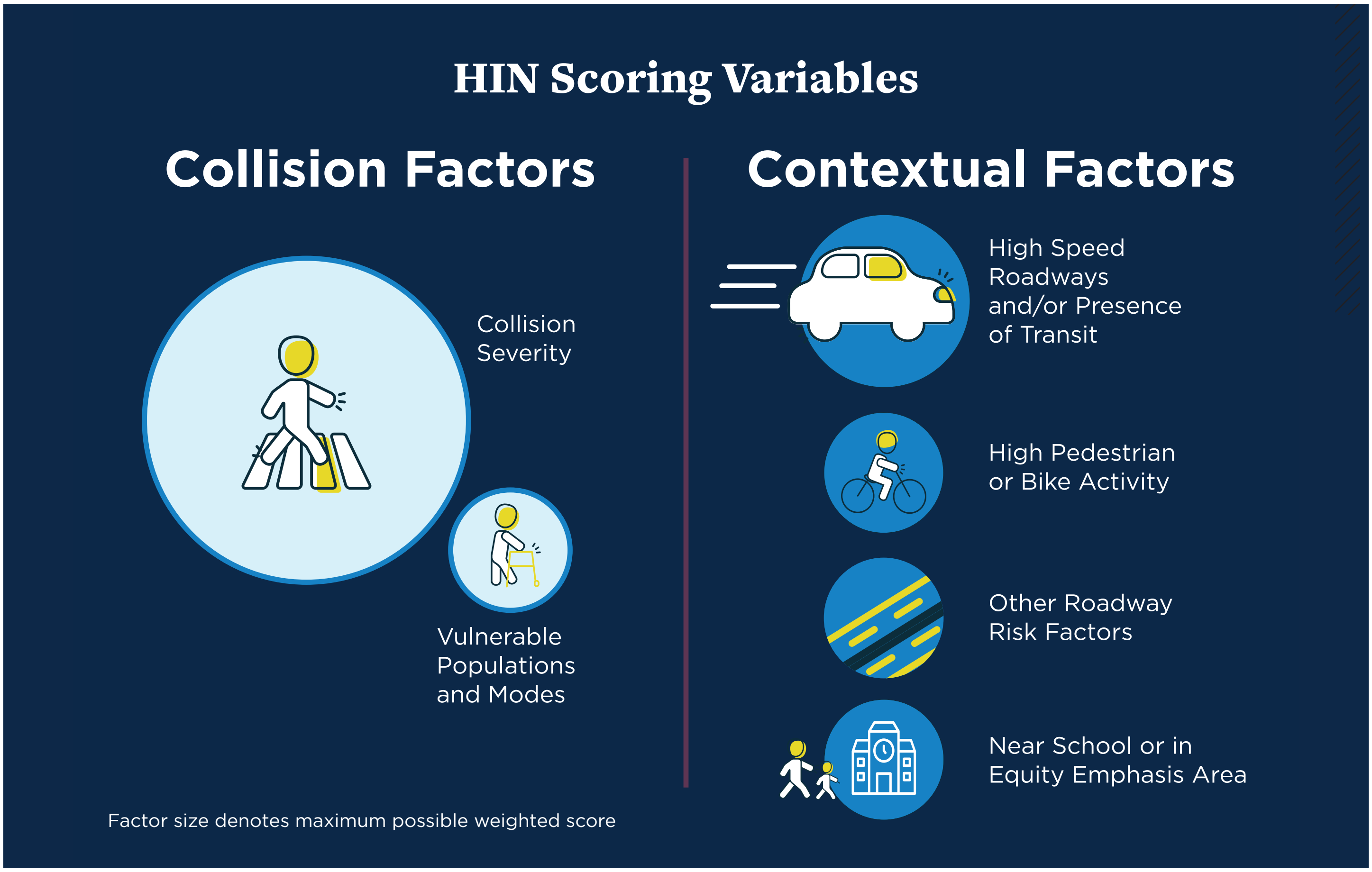
Prioritization Process and Results

To further hone Vision Zero strategic investments, LADOT focuses comprehensive safety improvements on a high-scoring subset of the HIN: the Priority Corridors and Intersections. Priority corridors and intersections are identified from the HIN using the same factors as the HIN process, but with contextual factors counting for a larger share of the score. In addition, this process prioritized corridors and intersections on a designated 2035 Mobility Plan Enhanced Network.

These prioritization factors allow LADOT to identify locations that have high concentrations of severe and fatal collisions while helping to achieve other departmental priorities, such as a focus on equity emphasis areas and implementation of the Mobility Plan.

This process was completed for each mode-specific HIN (i.e., bicycle, pedestrian, motorcycle, and motor vehicle) and the All Modes HIN, resulting in five final priority location lists. The prioritization process ranked all HIN corridors and all intersections citywide, allowing LADOT to continue use of the prioritization results into the future.

The HINs and top priority locations can be seen on the following pages.



PRIORITY INTERSECTIONS AND CORRIDORS

All Modes HIN

- ● Top 10 Scoring Intersections
- ━ Top 10 Scoring Corridors
- ━ High Injury Network (HIN)

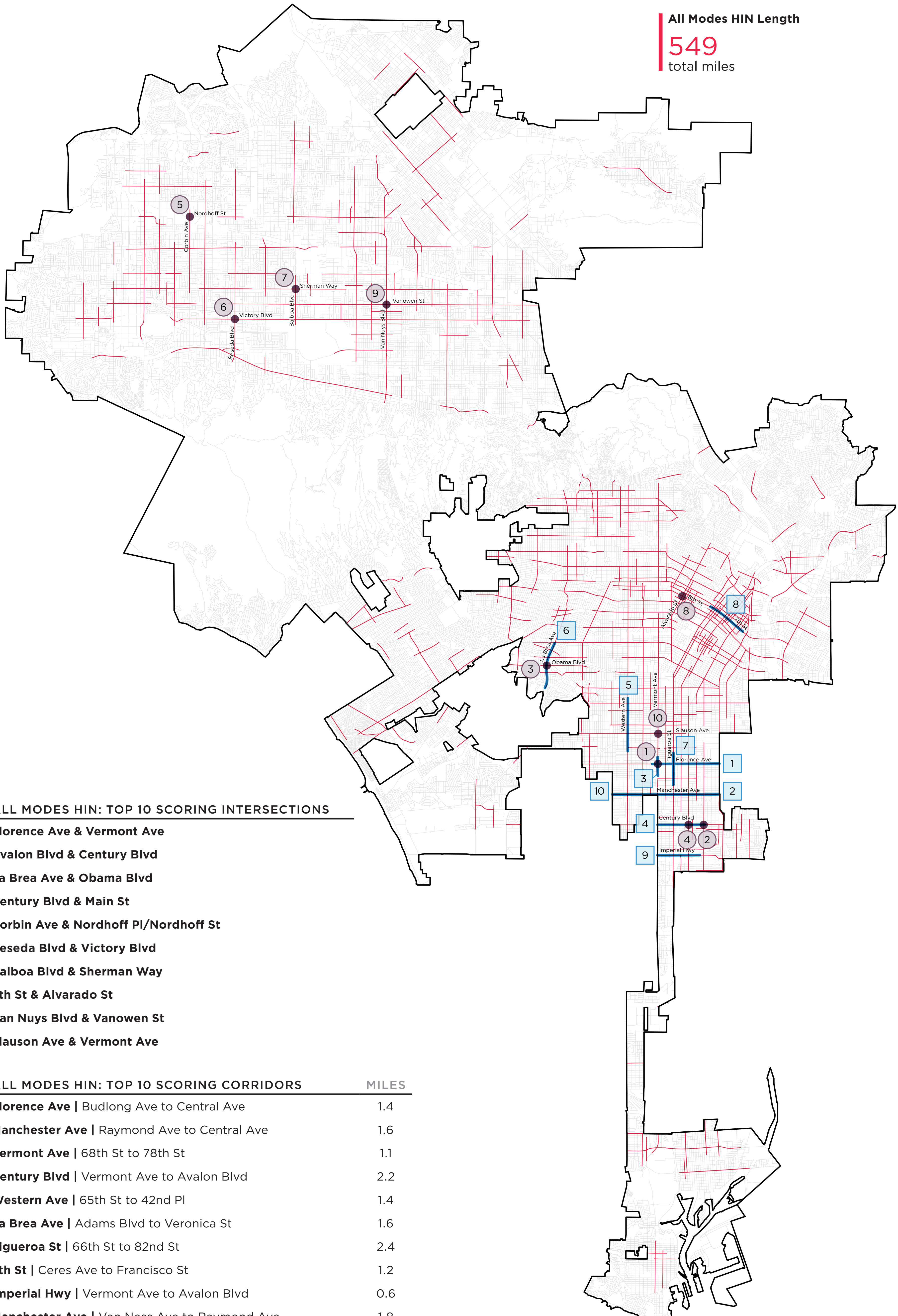
Where are collisions occurring?

61.8%
of all KSI collisions fall on

7.5%
of the citywide network

All Modes HIN Length

549
total miles



○ ALL MODES HIN: TOP 10 SCORING INTERSECTIONS

1	**Florence Ave & Vermont Ave**
2	**Avalon Blvd & Century Blvd**
3	**La Brea Ave & Obama Blvd**
4	**Century Blvd & Main St**
5	**Corbin Ave & Nordhoff Pl/Nordhoff St**
6	**Reseda Blvd & Victory Blvd**
7	**Balboa Blvd & Sherman Way**
8	**8th St & Alvarado St**
9	**Van Nuys Blvd & Vanowen St**
10	**Slauson Ave & Vermont Ave**

	ALL MODES HIN: TOP 10 SCORING CORRIDORS	MILES
1	**Florence Ave |** Budlong Ave to Central Ave	1.4
2	**Manchester Ave |** Raymond Ave to Central Ave	1.6
3	**Vermont Ave |** 68th St to 78th St	1.1
4	**Century Blvd |** Vermont Ave to Avalon Blvd	2.2
5	**Western Ave |** 65th St to 42nd Pl	1.4
6	**La Brea Ave |** Adams Blvd to Veronica St	1.6
7	**Figueroa St |** 66th St to 82nd St	2.4
8	**7th St |** Ceres Ave to Francisco St	1.2
9	**Imperial Hwy |** Vermont Ave to Avalon Blvd	0.6
10	**Manchester Ave |** Van Ness Ave to Raymond Ave	1.8

PRIORITY INTERSECTIONS AND CORRIDORS

Pedestrian HIN

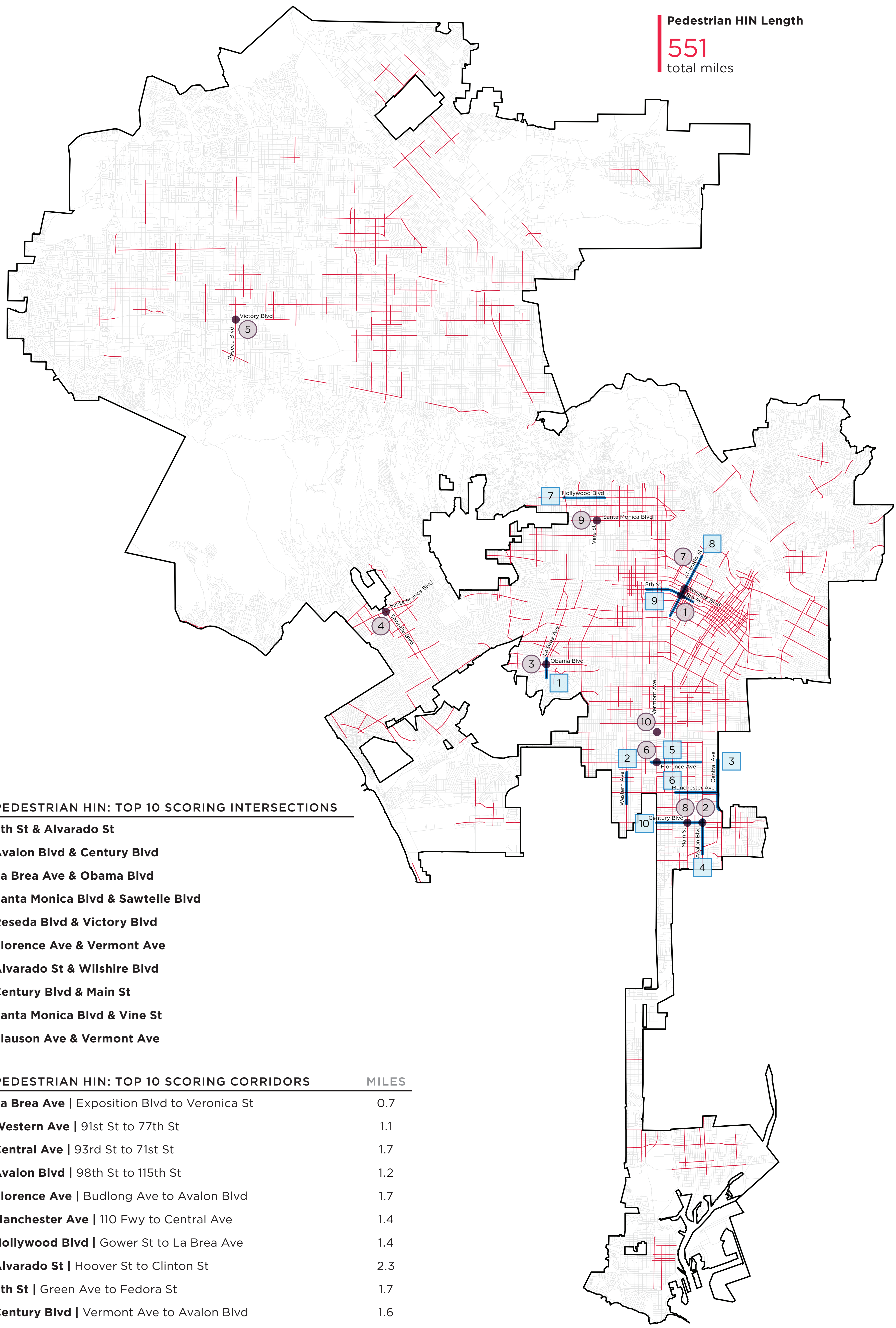
- Top 10 Scoring Intersections
- Top 10 Scoring Corridors
- High Injury Network (HIN)

Where are collisions occurring?

72.3%
of Pedestrian KSI collisions fall on
7.5%
of the citywide network

Pedestrian HIN Length

551
total miles



PEDESTRIAN HIN: TOP 10 SCORING INTERSECTIONS	
1	**8th St & Alvarado St**
2	**Avalon Blvd & Century Blvd**
3	**La Brea Ave & Obama Blvd**
4	**Santa Monica Blvd & Sawtelle Blvd**
5	**Reseda Blvd & Victory Blvd**
6	**Florence Ave & Vermont Ave**
7	**Alvarado St & Wilshire Blvd**
8	**Century Blvd & Main St**
9	**Santa Monica Blvd & Vine St**
10	**Slauson Ave & Vermont Ave**

	PEDESTRIAN HIN: TOP 10 SCORING CORRIDORS	MILES
1	**La Brea Ave |** Exposition Blvd to Veronica St	0.7
2	**Western Ave |** 91st St to 77th St	1.1
3	**Central Ave |** 93rd St to 71st St	1.7
4	**Avalon Blvd |** 98th St to 115th St	1.2
5	**Florence Ave |** Budlong Ave to Avalon Blvd	1.7
6	**Manchester Ave |** 110 Fwy to Central Ave	1.4
7	**Hollywood Blvd |** Gower St to La Brea Ave	1.4
8	**Alvarado St |** Hoover St to Clinton St	2.3
9	**8th St |** Green Ave to Fedora St	1.7
10	**Century Blvd |** Vermont Ave to Avalon Blvd	1.6

Bicycle HIN

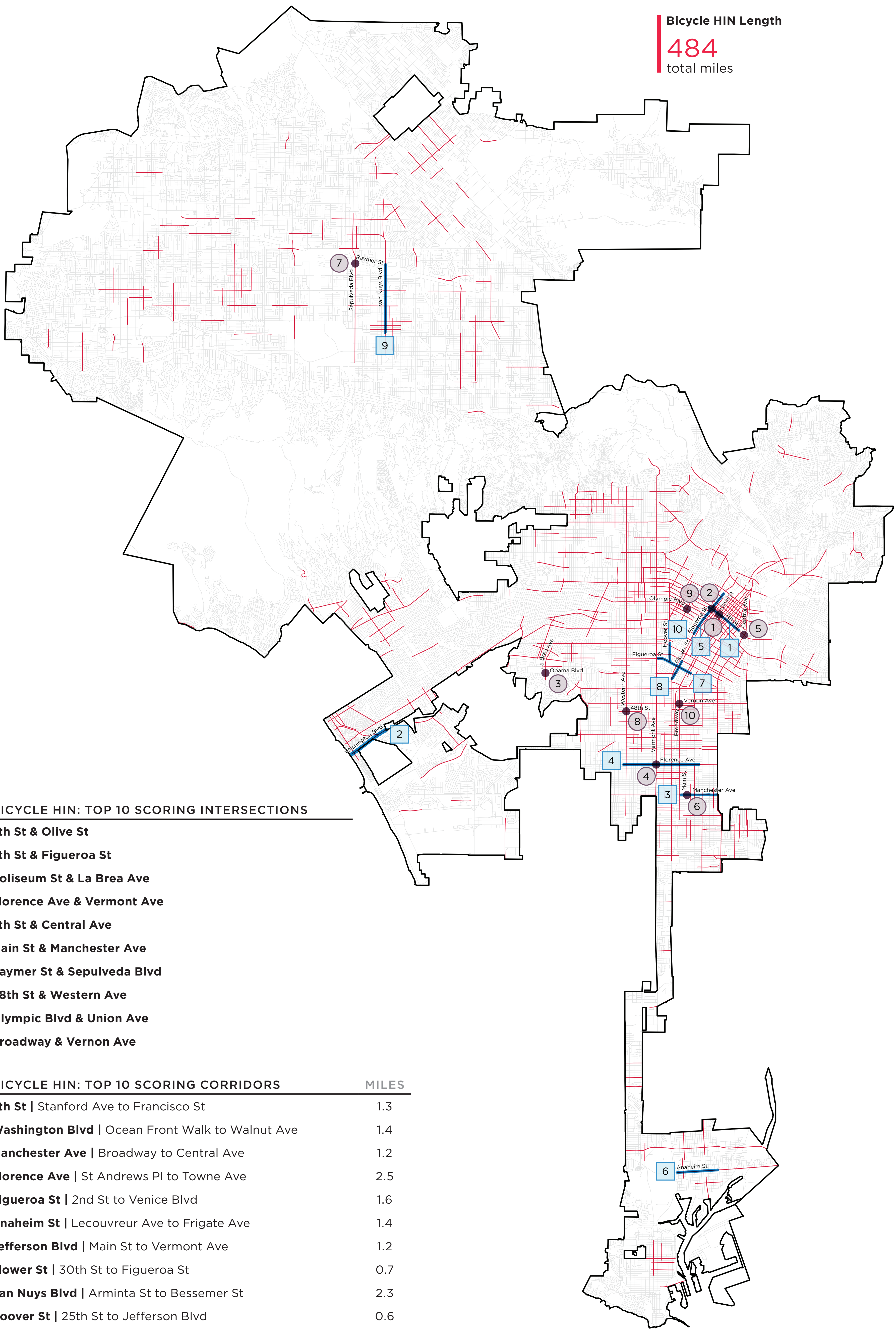
- Top 10 Scoring Intersections
- Top 10 Scoring Corridors
- High Injury Network (HIN)

Where are collisions occurring?

79.4%
of Bicycle KSI collisions fall on
6.6%
of the citywide network

Bicycle HIN Length

484
total miles



BICYCLE HIN: TOP 10 SCORING INTERSECTIONS

1	**7th St & Olive St**
2	**7th St & Figueroa St**
3	**Coliseum St & La Brea Ave**
4	**Florence Ave & Vermont Ave**
5	**7th St & Central Ave**
6	**Main St & Manchester Ave**
7	**Raymer St & Sepulveda Blvd**
8	**48th St & Western Ave**
9	**Olympic Blvd & Union Ave**
10	**Broadway & Vernon Ave**

	BICYCLE HIN: TOP 10 SCORING CORRIDORS	MILES
1	**7th St |** Stanford Ave to Francisco St	1.3
2	**Washington Blvd |** Ocean Front Walk to Walnut Ave	1.4
3	**Manchester Ave |** Broadway to Central Ave	1.2
4	**Florence Ave |** St Andrews Pl to Towne Ave	2.5
5	**Figueroa St |** 2nd St to Venice Blvd	1.6
6	**Anaheim St |** Lecouvreur Ave to Frigate Ave	1.4
7	**Jefferson Blvd |** Main St to Vermont Ave	1.2
8	**Flower St |** 30th St to Figueroa St	0.7
9	**Van Nuys Blvd |** Arminta St to Bessemer St	2.3
10	**Hoover St |** 25th St to Jefferson Blvd	0.6

Motorcycle HIN

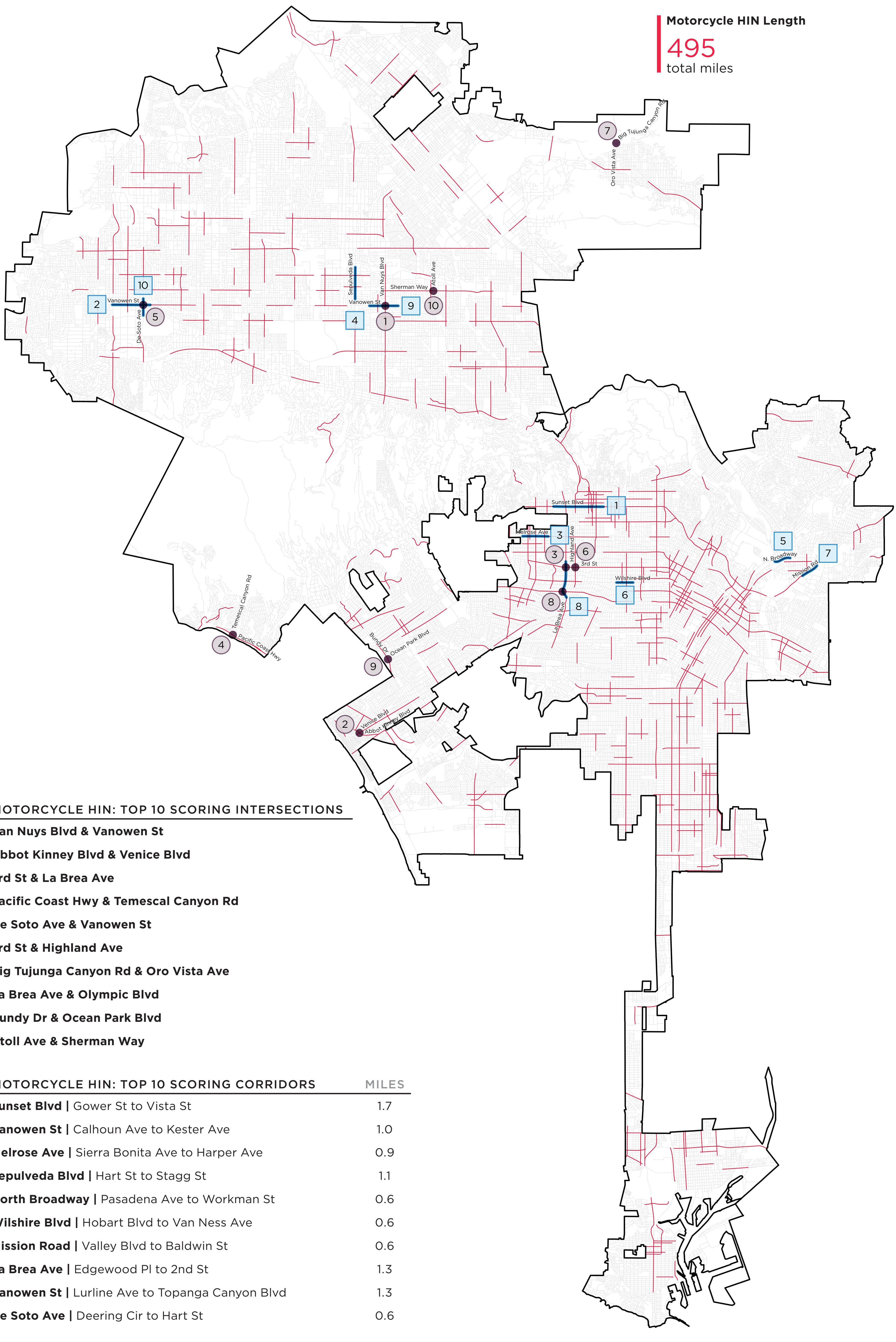
- ● Top 10 Scoring Intersections
- — Top 10 Scoring Corridors
- — High Injury Network (HIN)

Where are collisions occurring?

74.3%
of Motorcycle KSI collisions fall on
6.8%
of the citywide network

Motorcycle HIN Length

495
total miles



○ MOTORCYCLE HIN: TOP 10 SCORING INTERSECTIONS	
1	**Van Nuys Blvd & Vanowen St**
2	**Abbot Kinney Blvd & Venice Blvd**
3	**3rd St & La Brea Ave**
4	**Pacific Coast Hwy & Temescal Canyon Rd**
5	**De Soto Ave & Vanowen St**
6	**3rd St & Highland Ave**
7	**Big Tujunga Canyon Rd & Oro Vista Ave**
8	**La Brea Ave & Olympic Blvd**
9	**Bundy Dr & Ocean Park Blvd**
10	**Atoll Ave & Sherman Way**

□ MOTORCYCLE HIN: TOP 10 SCORING CORRIDORS		MILES
1	**Sunset Blvd |** Gower St to Vista St	1.7
2	**Vanowen St |** Calhoun Ave to Kester Ave	1.0
3	**Melrose Ave |** Sierra Bonita Ave to Harper Ave	0.9
4	**Sepulveda Blvd |** Hart St to Stagg St	1.1
5	**North Broadway |** Pasadena Ave to Workman St	0.6
6	**Wilshire Blvd |** Hobart Blvd to Van Ness Ave	0.6
7	**Mission Road |** Valley Blvd to Baldwin St	0.6
8	**La Brea Ave |** Edgewood Pl to 2nd St	1.3
9	**Vanowen St |** Lurline Ave to Topanga Canyon Blvd	1.3
10	**De Soto Ave |** Deering Cir to Hart St	0.6

PRIORITY INTERSECTIONS AND CORRIDORS

Vehicle HIN

- Top 10 Scoring Intersections
- Top 10 Scoring Corridors
- High Injury Network (HIN)

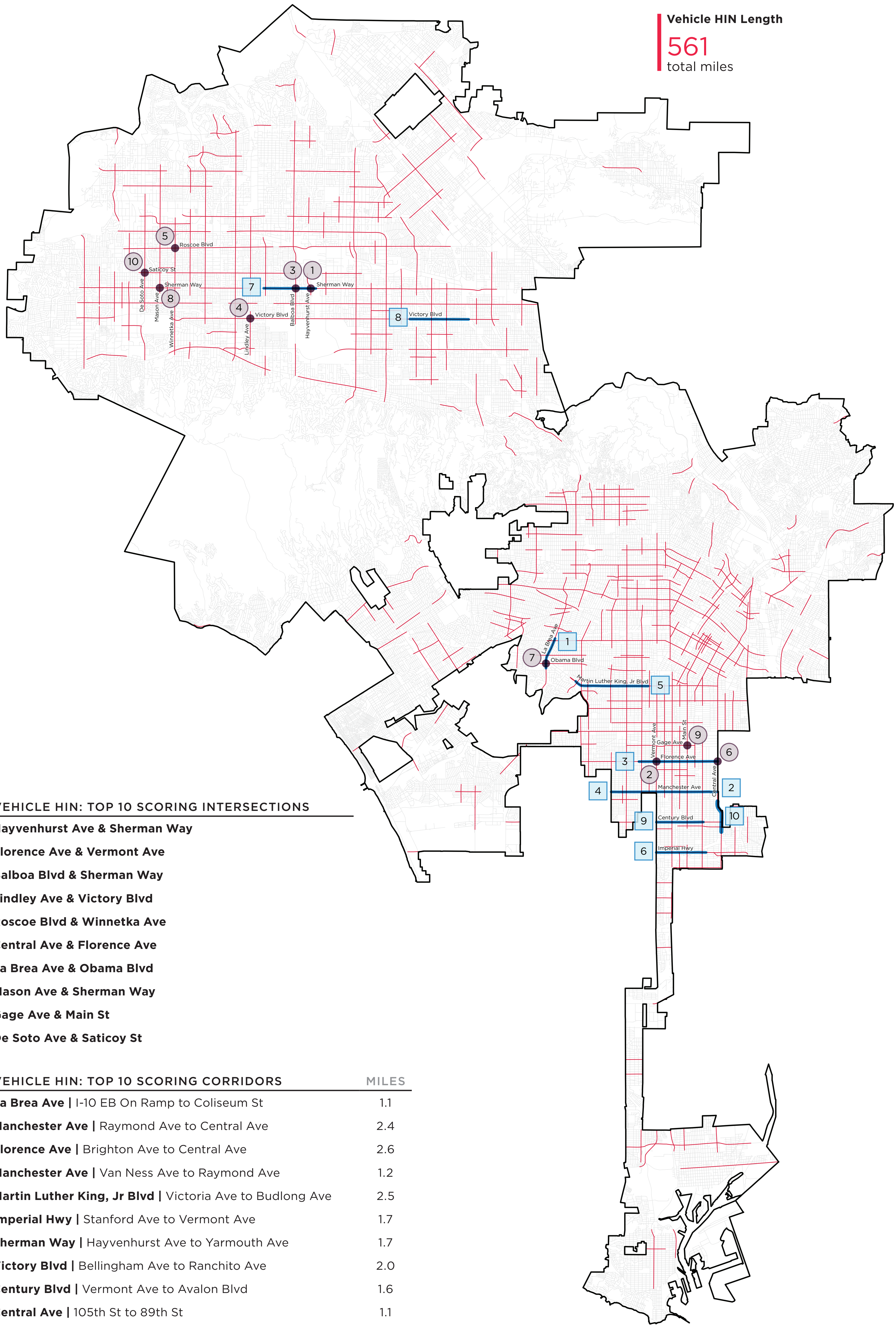
Where are collisions occurring?

67.7%
of Vehicle KSI collisions fall on

7.7%
of the citywide network

Vehicle HIN Length

561
total miles

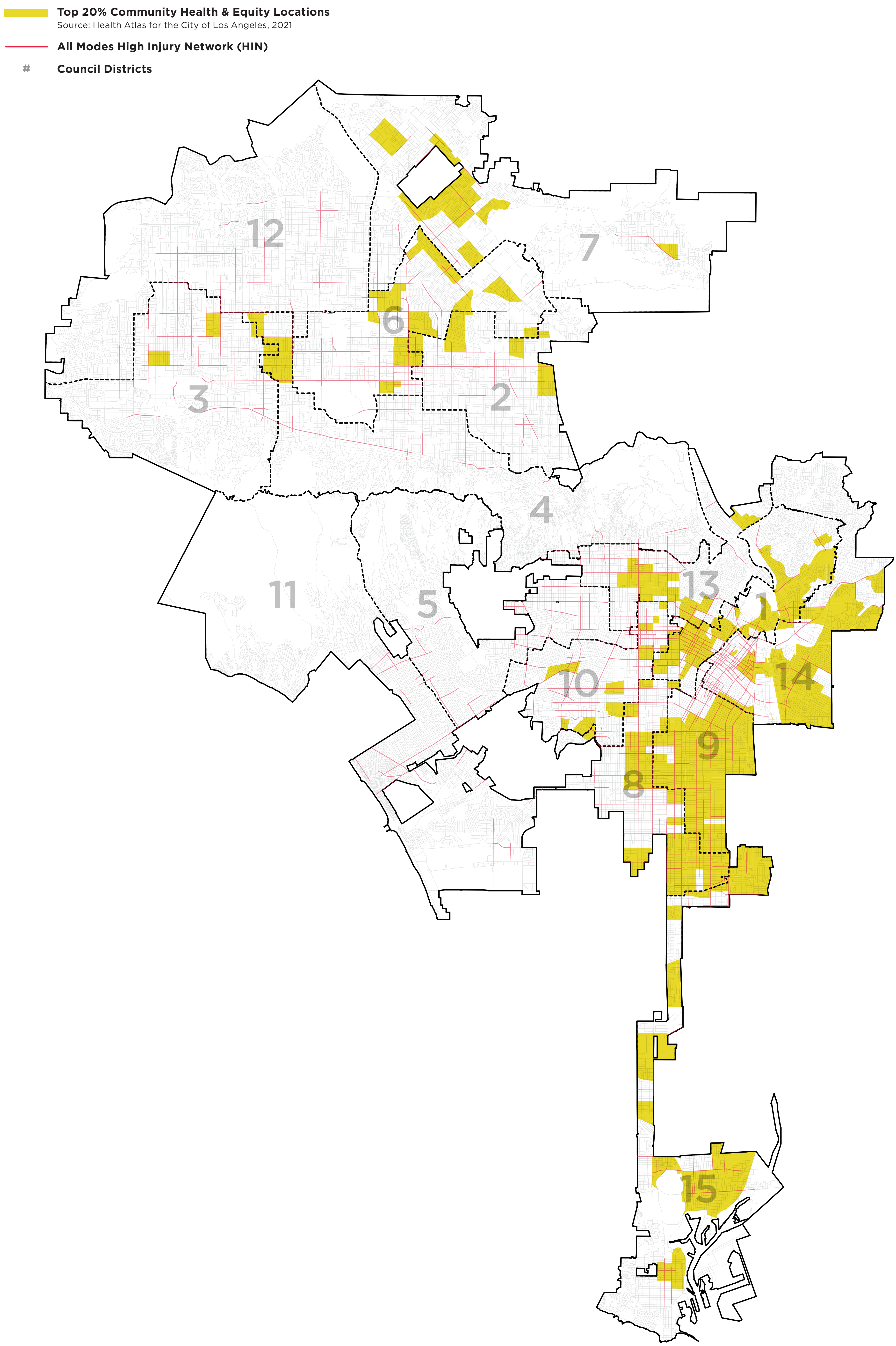


VEHICLE HIN: TOP 10 SCORING INTERSECTIONS	
1	**Hayvenhurst Ave & Sherman Way**
2	**Florence Ave & Vermont Ave**
3	**Balboa Blvd & Sherman Way**
4	**Lindley Ave & Victory Blvd**
5	**Roscoe Blvd & Winnetka Ave**
6	**Central Ave & Florence Ave**
7	**La Brea Ave & Obama Blvd**
8	**Mason Ave & Sherman Way**
9	**Gage Ave & Main St**
10	**De Soto Ave & Saticoy St**

VEHICLE HIN: TOP 10 SCORING CORRIDORS		MILES
1	**La Brea Ave |** I-10 EB On Ramp to Coliseum St	1.1
2	**Manchester Ave |** Raymond Ave to Central Ave	2.4
3	**Florence Ave |** Brighton Ave to Central Ave	2.6
4	**Manchester Ave |** Van Ness Ave to Raymond Ave	1.2
5	**Martin Luther King, Jr Blvd |** Victoria Ave to Budlong Ave	2.5
6	**Imperial Hwy |** Stanford Ave to Vermont Ave	1.7
7	**Sherman Way |** Hayvenhurst Ave to Yarmouth Ave	1.7
8	**Victory Blvd |** Bellingham Ave to Ranchito Ave	2.0
9	**Century Blvd |** Vermont Ave to Avalon Blvd	1.6
10	**Central Ave |** 105th St to 89th St	1.1

PRIORITY LOCATIONS

Community Health & Equity



Risk Factors & Collision Profiles

Systemic Analysis

The systemic analysis paired collision factors (e.g. mode, type, time of day, cause of collision) with roadway and built environment contextual factors (e.g. roadway speed, intersection control type, adjacent land use) to uncover systemic patterns for severe and fatal collisions across the city. Systemic analysis is an important component of identifying roadway safety issues because it allows the City to go beyond hot spot identification and understand the risk factors underlying severe and fatal collision trends.

Risk Factors

Risk factors identified through the systemic analysis are roadway or other contextual characteristics that account for the highest share of fatal and severe injury collisions.

The risk factors identified account for a disproportionate share of KSI collisions compared with the factor's share of the total street network. In Los Angeles, the factors are:

- **30+ mph 85th percentile speed**
- **40-50 mph 85th percentile speed (esp. vehicle-only collisions)**
- **20-30k ADT**
- **30k+ ADT**
- **Major Signal without Protected Left Turns or Variable Left Turns**
- **Truck Routes**
- **Commercial Land Use**
- **Poor Pavement Condition**
- **Los Angeles Equity Emphasis Areas**
- **CA Disadvantaged Communities**
- **USDOT Disadvantaged Communities**
- **Locations Near Transit Stops**
- **Bike Enhanced and Bike Lane Networks**
- **Transit Enhanced Network**
- **Pedestrian Enhanced Districts**
- **Boulevard II Roadway Classification (esp. vehicle-only and motorcycle collisions)**

Collision Profiles

Collision profiles highlight specific conditions that account for a large share of fatal and severe injuries, for each of the modes analyzed.

The following pages present the **24 collision profiles** identified for the City of Los Angeles, along with the top locations where each collision type occurs most frequently.

Chapter 4 of this report details countermeasures that are suggested for particular collision profiles. The combination of collision profiles, top locations and countermeasures will directly inform recommended projects to help the City advance its Vision Zero commitment through the systemic implementation of safety countermeasures.

Collision Profile Key Terms

Major Signals are signalized intersections where at least one leg is designated as a Boulevard or Avenue roadway, per Mobility Plan 2035. All other signalized intersections are categorized as Minor Signals.

Major Unsignalized Intersections are intersections where at least one leg is designated as a Boulevard or Avenue roadway. This category is built on the LADOT signal database, so signals not maintained by LADOT or not included in this database may be identified as Major Unsignalized Intersections.

Collision profiles are defined as a combination of at least one collision factor and at least one contextual factor.

Major Signals without Fully Protected Lefts are signalized intersections where at least one leg is designated as a Boulevard or Avenue roadway and at least one leg has a left turn that is not fully protected. This includes locations where left-turn phasing is protected/permissive on at least one leg.

ADT is a 2022-2023 estimate for weekday (Tuesday-Thursday) Average Daily Traffic as determined through StreetLight Data connected vehicle data (CVD) estimates. ADT for local roadways was not available, and assumed to be less than 5k.

The determination of how and where a collision occurred is at the discretion of the police officer writing the collision report. For example, the collision factor **Dark-Street Lights** refers to collisions that occur post-sunset where there are street lights present. Officers will use their discretion to determine presence of a street light.

COLLISION PROFILES

Profile 1 (2017-2021 Injury Collisions)

Roads with 40-50 MPH Speeds in Dark Conditions (Street Lights Present)

MODES	All Modes
COLLISION FACTOR	Dark-Street Lights
CONTEXTUAL FACTOR	40-49.9 MPH (85th percentile speed)

7,102
Total Collisions

1,066 (14% of citywide KSI collisions)
KSI Collisions

Avalon Blvd & Century Blvd
Century Blvd & Sepulveda Blvd
Balboa Blvd & Sherman Way
Top Locations

Profile 2 (2017-2021 Injury Collisions)

Bicyclists Hit by Drivers Proceeding Straight on Streets with ADT between 10k and 20k

MODES	Bicycle
COLLISION FACTOR	Driver Proceeding Straight
CONTEXTUAL FACTOR	10-19.9k ADT

628
Total Collisions

117 (17% of citywide bike KSI collisions)
KSI Collisions

6th St & San Pedro St
7th St & Central Ave
7th St & Crocker St
Top Locations

COLLISION PROFILES

Profile 3 (2017-2021 Injury Collisions)

Bicyclists Hit by Drivers Proceeding Straight at Major Unsignalized Intersections

MODES	**Bicycle**
COLLISION FACTOR	**Driver Proceeding Straight**
CONTEXTUAL FACTOR	**Major Unsignalized Intersection**

Note: Includes signals not owned by LADOT

794
Total Collisions

139 (20% of citywide bike KSI collisions)
KSI Collisions

7th St & Crocker St
Anaheim St & King Ave
35th St & Western Ave
Top Locations

Profile 4 (2017-2021 Injury Collisions)

Bicyclists Hit by Drivers Proceeding Straight On Roadways with 40-50 MPH Speeds

MODES	**Bicycle**
COLLISION FACTOR	**Driver Proceeding Straight**
CONTEXTUAL FACTOR	**40-49.9 MPH (85th percentile speed)**

561
Total Collisions

133 (19% of citywide bike KSI collisions)
KSI Collisions

Chandler Blvd & Leghorn Ave
Compton Ave & Imperial Hwy
Haskell Ave & Nordhoff St
Top Locations

COLLISION PROFILES

Profile 5 (2017-2021 Injury Collisions)

Bicyclists Hit Broadside Adjacent to Residential Land Use

779
Total Collisions

90 (13% of citywide bike KSI collisions)
KSI Collisions

MODES	Bicycle
COLLISION FACTOR	Broadside
CONTEXTUAL FACTOR	Residential Land Use

81st St & Hoover St
9th St & Grand Ave
Coliseum St & La Brea Ave
Top Locations

Profile 6 (2017-2021 Injury Collisions)

Motorcyclists Hit Broadside On Roadways With 40-50 MPH Speeds

636
Total Collisions

226 (15% of citywide motorcycle KSI collisions)
KSI Collisions

MODES	Motorcycle
COLLISION FACTOR	Broadside
CONTEXTUAL FACTOR	40-49.9 MPH (85th percentile speed)

Lassen St & Reseda Blvd
Bristol Cir & Sunset Blvd
Manchester Ave & Wadsworth Ave
Top Locations

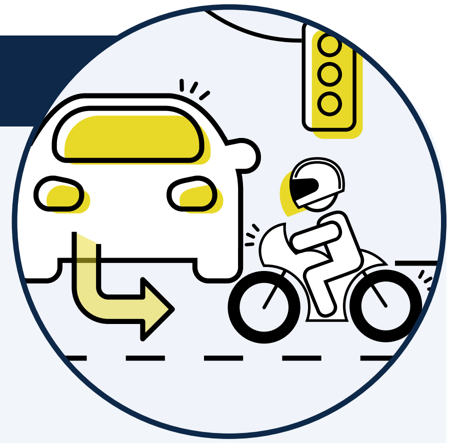
COLLISION PROFILES

Profile 7 (2017-2021 Injury Collisions)

Motorcyclists Hit by Drivers Turning Left at Major Signals with No Fully Protected Lefts

MODES	**Motorcycle**
COLLISION FACTOR	**Driver Making Left Turn**
CONTEXTUAL FACTOR	**Major Signal with No Protected Lefts**

Note: Includes signals with protected/ permissive phasing



924
Total Collisions

305 (20% of citywide motorcycle KSI collisions)
KSI Collisions

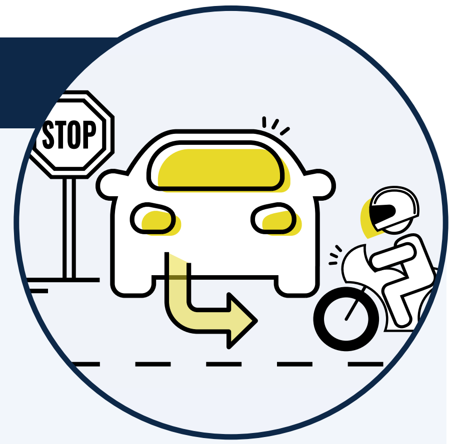
Bundy Dr & Ocean Park Blvd
3rd St & La Brea Ave
Magnolia Blvd & Tujunga Ave
Top Locations

Profile 8 (2017-2021 Injury Collisions)

Motorcyclists Hit by Drivers Turning Left at Major Unsignalized Intersections

MODES	**Motorcycle**
COLLISION FACTOR	**Driver Making Left Turn**
CONTEXTUAL FACTOR	**Major Unsignalized Intersection**

Note: Includes signals not owned by LADOT



728
Total Collisions

226 (15% of citywide motorcycle KSI collisions)
KSI Collisions

Grant Ave & Lincoln Blvd
Big Tujunga Canyon Rd & Oro Vista Ave
20th St & Figueroa St
Top Locations

COLLISION PROFILES

Profile 9 (2017-2021 Injury Collisions)

Pedestrians Hit between the Hours of 9 PM and 6 AM with No Marked Crosswalk

MODES	Pedestrian
COLLISION FACTOR	9PM-6AM
CONTEXTUAL FACTOR	No Marked Crosswalk

1,230
Total Collisions

529 (19% of citywide pedestrian KSI collisions)
KSI Collisions

90th St & Central Ave
89th St & Central Ave
Century Blvd & Wall St
Top Locations

Profile 10 (2017-2021 Injury Collisions)

Pedestrians Hit When Crossing Not in a Crosswalk at Major Unsignalized Intersections

MODES	Pedestrian
COLLISION FACTOR	Crossing Not in Crosswalk
CONTEXTUAL FACTOR	Major Unsignalized Intersection

Note: Includes signals not owned by LADOT

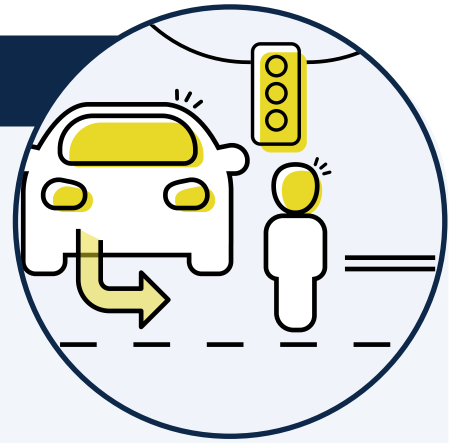
1,070
Total Collisions

422 (15% of citywide pedestrian KSI collisions)
KSI Collisions

116th St & Avalon Blvd
89th St & Central Ave
81st St & Avalon Blvd
Top Locations

COLLISION PROFILES

Profile 11 (2017-2021 Injury Collisions)



Pedestrians Hit When Crossing Not in a Crosswalk at Major Signals with No Fully Protected Lefts

MODES	**Pedestrian**
COLLISION FACTOR	**Crossing Not in Crosswalk**
CONTEXTUAL FACTOR	**Major Signal with No Protected Lefts**

Note: Includes signals with protected/ permissive phasing

899
Total Collisions

298 (10% of citywide pedestrian KSI collisions)
KSI Collisions

6th St & San Pedro St
8th St & Alvarado St
Century Blvd & Main St
Top Locations

Profile 12 (2017-2021 Injury Collisions)

Pedestrians Hit Near Transit Stops between 9 PM and Midnight

MODES	**Pedestrian**
COLLISION FACTOR	**9PM-Midnight**
CONTEXTUAL FACTOR	**Near Transit Stop**

1,100
Total Collisions

340 (12% of citywide pedestrian KSI collisions)
KSI Collisions

Avalon Blvd & Century Blvd
Santa Monica Blvd & Sawtelle Blvd
Coliseum St & MLK Jr Blvd
Top Locations

COLLISION PROFILES

Profile 13 (2017-2021 Injury Collisions)

Pedestrians Age 65+ Hit on Streets Designated as Pedestrian Enhanced Districts

MODES	Pedestrian
COLLISION FACTOR	Victim Age 65+
CONTEXTUAL FACTOR	Pedestrian Enhanced Districts

1,259
Total Collisions

341 (12% of citywide pedestrian KSI collisions)
KSI Collisions

College St & N Broadway
6th St & Grand View St
Eastlake Ave & N Broadway
Top Locations

Profile 14 (2017-2021 Injury Collisions)

Pedestrians Hit by Drivers Proceeding Straight Near Schools

MODES	Pedestrian
COLLISION FACTOR	Driver Proceeding Straight
CONTEXTUAL FACTOR	Near School

2,731
Total Collisions

820 (29% of citywide pedestrian KSI collisions)
KSI Collisions

Century Blvd & Main St
Santa Monica Blvd & Sawtelle Blvd
Santa Monica Blvd & Vine St
Top Locations

COLLISION PROFILES

Profile 15 (2017-2021 Injury Collisions)

Pedestrians Hit Near Parks in Dark Conditions (Street Lights Present)

MODES	Pedestrian
COLLISION FACTOR	Dark-Street Lights
CONTEXTUAL FACTOR	Near Park

1,703
Total Collisions

526 (18% of citywide pedestrian KSI collisions)
KSI Collisions

8th St & Alvarado St
6th St & San Pedro St
Florence Ave & Vermont Ave
Top Locations

Profile 16 (2017-2021 Injury Collisions)

Head-On Vehicle Collisions Along Roadways in CA Disadvantaged Communities

MODES	Vehicle-Only
COLLISION FACTOR	Head-On
CONTEXTUAL FACTOR	Disadvantaged Community-CalEnviroScreen

5,248
Total Collisions

317 (13% of citywide vehicle-only KSI collisions)
KSI Collisions

Slauson Ave & Western Ave
MLK Jr Blvd & Vermont Ave
Hoover St & Manchester Ave
Top Locations

COLLISION PROFILES

Profile 17 (2017-2021 Injury Collisions)

Vehicle Collisions Along Truck Routes that Result from Unsafe Speed Violations

MODES	**Vehicle-Only**
COLLISION FACTOR	**Unsafe Speed Violation**
CONTEXTUAL FACTOR	**Truck Route**

5,811
Total Collisions

260 (10% of citywide vehicle-only KSI collisions)
KSI Collisions

Manchester Ave & Western Ave
Century Blvd & Figueroa St
Figueroa St & Manchester Ave
Top Locations

Profile 18 (2017-2021 Injury Collisions)

Vehicles Collisions at Major Unsignalized Intersections in Dark Conditions (Street Lights Present)

MODES	**Vehicle-Only**
COLLISION FACTOR	**Dark-Street Lights**
CONTEXTUAL FACTOR	**Major Unsignalized Intersection**

Note: Includes signals not owned by LADOT

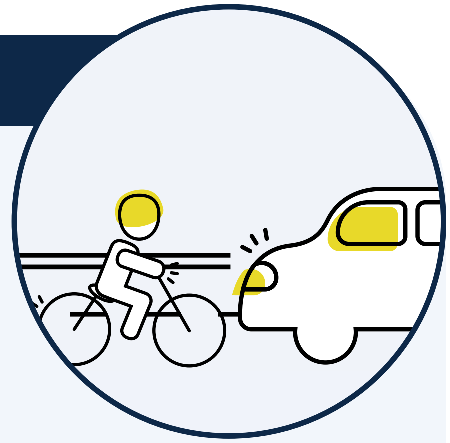
5,108
Total Collisions

342 (14% of citywide vehicle-only KSI collisions)
KSI Collisions

9nd St & Central Ave
Florence Ave & Harvard Blvd
65th St & Figueroa St
Top Locations

COLLISION PROFILES

Profile 19 (2017-2021 Injury Collisions)



Bicycles Collisions with Wrong Side of the Road Violations on Streets with No Bicycle Facilities

MODES	Bicycle
COLLISION FACTOR	Wrong Side of Road Violation
CONTEXTUAL FACTOR	No On-Street Bike Facility

787
Total Collisions

73 (11% of citywide bike KSI collisions)
KSI Collisions

Manchester Ave & Vermont Ave
Parthenia St & Sepulveda Blvd
San Pedro St & Washington Blvd
Top Locations

Profile 20 (2017-2021 Injury Collisions)

Pedestrians Hit by Drivers Turning Right at Major Signals

MODES	Pedestrian
COLLISION FACTOR	Driver Turning Right
CONTEXTUAL FACTOR	Major Signal

1,176
Total Collisions

100 (4% of citywide pedestrian KSI collisions)
KSI Collisions

Reseda Blvd & Vanowen St
Sunset Blvd & Western Ave
La Brea Ave & Obama Blvd
Top Locations

COLLISION PROFILES

Profile 21 (2017-2021 Injury Collisions)

Unsafe Speed Violation Collisions on Streets Designated as Neighborhood Enhanced Network

MODES	All Modes
COLLISION FACTOR	Unsafe Speed Violations
CONTEXTUAL FACTOR	Neighborhood Enhanced Network

4,359
Total Collisions

295 (4% of citywide KSI collisions)
KSI Collisions

Manchester Ave & Western Ave
Florence Ave & Hoover St
Florence Ave & Western Ave
Top Locations

Profile 22 (2017-2021 Injury Collisions)

Unsafe Speed Violation Collisions Near Schools

MODES	All Modes
COLLISION FACTOR	Unsafe Speed Violations
CONTEXTUAL FACTOR	Near School

6,112
Total Collisions

391 (5% of citywide KSI collisions)
KSI Collisions

Florence Ave & Vermont Ave
Figueroa St & Manchester Ave
Slauson Ave & Vermont Ave
Top Locations

COLLISION PROFILES

Profile 23 (2017-2021 Injury Collisions)

Vehicles Hitting Objects at Major Unsignalized Intersections

MODES	Vehicle-Only
COLLISION FACTOR	Hit Object
CONTEXTUAL FACTOR	Major Unsignalized Intersection

Note: Includes signals not owned by LADOT

900
Total Collisions

129 (5% of citywide vehicle-only KSI collisions)
KSI Collisions

Reseda Blvd & Sesnon Blvd
Dona Dorotea Dr & Laurel Canyon Blvd
Burbank Blvd & McLennan Ave
Top Locations

Profile 24 (2017-2021 Injury Collisions)

Pedestrians Hit while Crossing in Crosswalks on Roads Classified as Avenue I or II

MODES	Pedestrian
COLLISION FACTOR	Crossing in Crosswalk
CONTEXTUAL FACTOR	Avenue I or II

4,022
Total Collisions

712 (25% of citywide pedestrian KSI collisions)
KSI Collisions

Vermont Ave & Wilshire Blvd
Hollywood Blvd & La Brea Ave
Broadway & Florence Ave
Top Locations

Equity Analysis Summary

Black residents make up 8% of LA's population, but account for 20% of pedestrians involved in KSI collisions.

Maintaining a focus on equity is a high priority for LADOT, and equity considerations can be found throughout this report. This summary highlights a sample of key takeaways from this analysis. Additional details can be found in **Appendix C** and **Appendix D.**

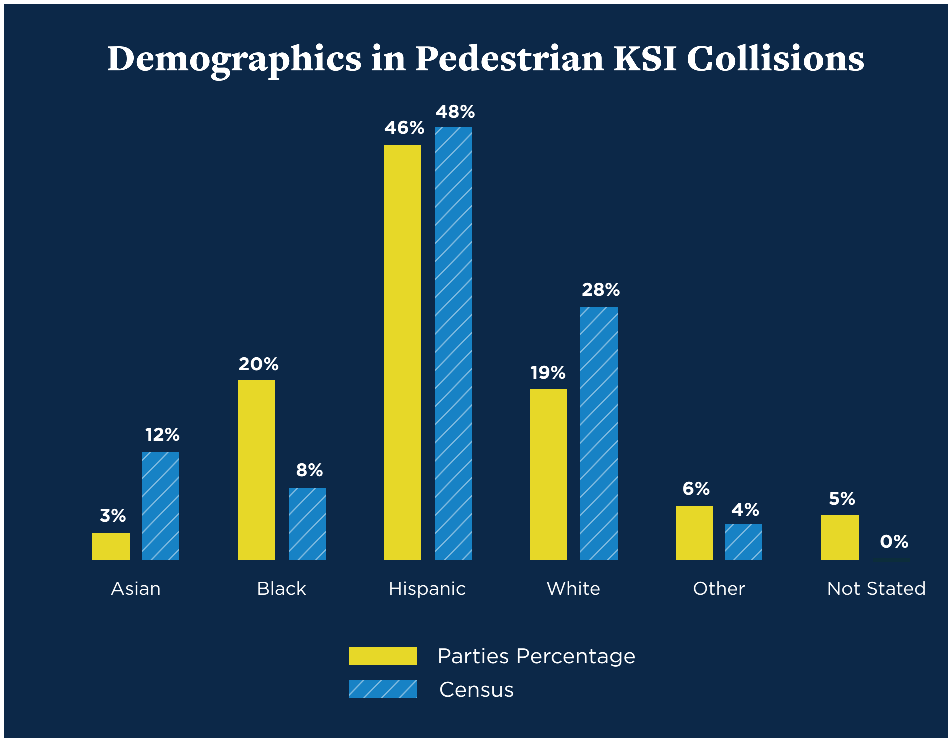
The analysis included examination of several equity considerations in roadway safety, including demographics of collision parties, disproportionality of collisions and HIN relative to equity emphasis areas and geographic distribution of demographic factors, and examination of equity factors during COVID-19.

Equity was also a key factor in the methodology for HIN development and location prioritization.

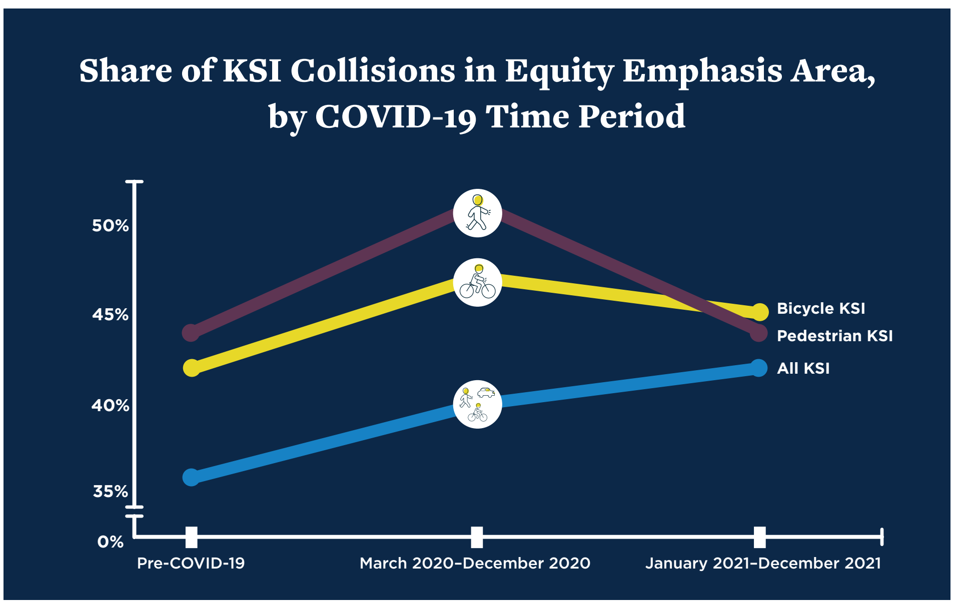
Key Findings

Black pedestrians and bicyclists are disproportionately represented in collisions, compared with City of Los Angeles census data. Hispanic bicyclists are also slightly disproportionately involved in collisions relative to their Census representation.

Geographic patterns of KSI collisions shifted during the pandemic. While the number of monthly KSI collisions declined in the first several months of the pandemic, compared to the pre-COVID-19 level, these collisions were occurring more frequently in equity emphasis areas of the City (the Top Quintile of Census Tracts for the Community Health and Equity Index).



Note: Current reporting practices include reporting race and ethnicity at the party level, but not for individual victims. For this reason, bicyclist and pedestrian collisions by race and ethnicity are evaluated at the party level with the assumption that each bicyclist or pedestrian party is an individual.



Council District Summary

The analysis summarized the HIN and KSI collisions by Council District (CD) boundaries to provide further insight into the geographical distribution of collisions.

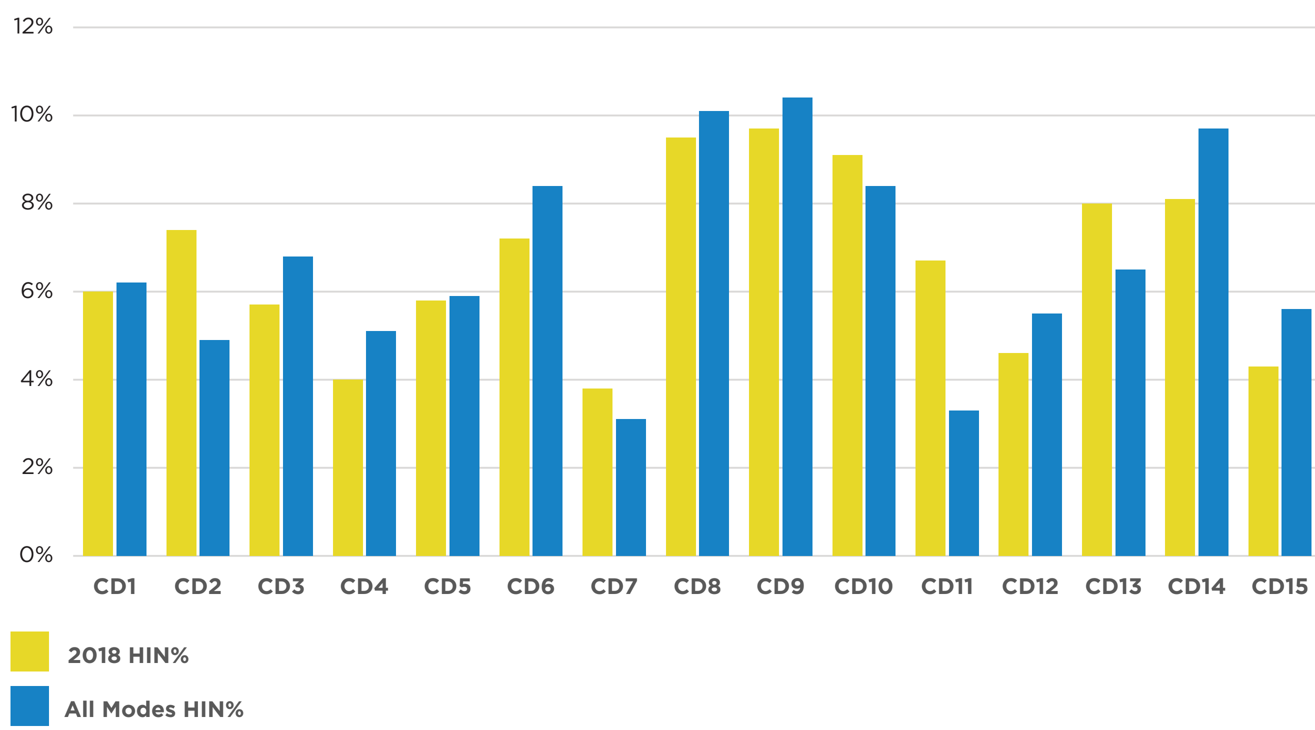
HIN by Council District

As noted previously, by applying a new methodology and evaluating new data, the updated All HIN accounts for approximately 40 more miles of roadway than the previous HIN, representing 7.5% of the citywide roadway network. The chart below illustrates the share of the All Modes HIN present within each Council District, compared with the 2018 HIN.

The share of the HIN falling within CD 11 has decreased by 50% relative to the 2018 HIN – the largest percentage decrease for all Council Districts. The share of the HIN in CD 15 increased by 30% - the largest increase for all Council Districts.

CD 8, 9, and 14 account for among the highest shares of the HIN - approximately 10% each. CD 7 and 11 account for among the lowest shares of the HIN – approximately 3% each.

Share of Current All Modes HIN by Council District (Compared with 2018 HIN)

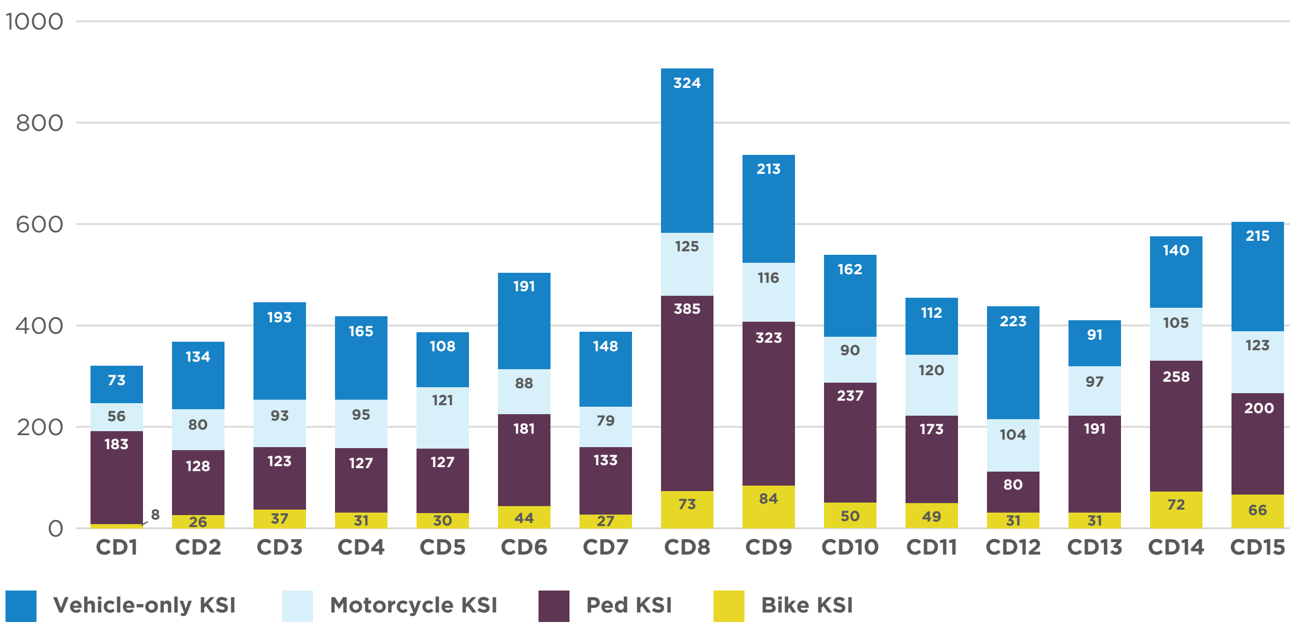


KSI Collisions by Council District

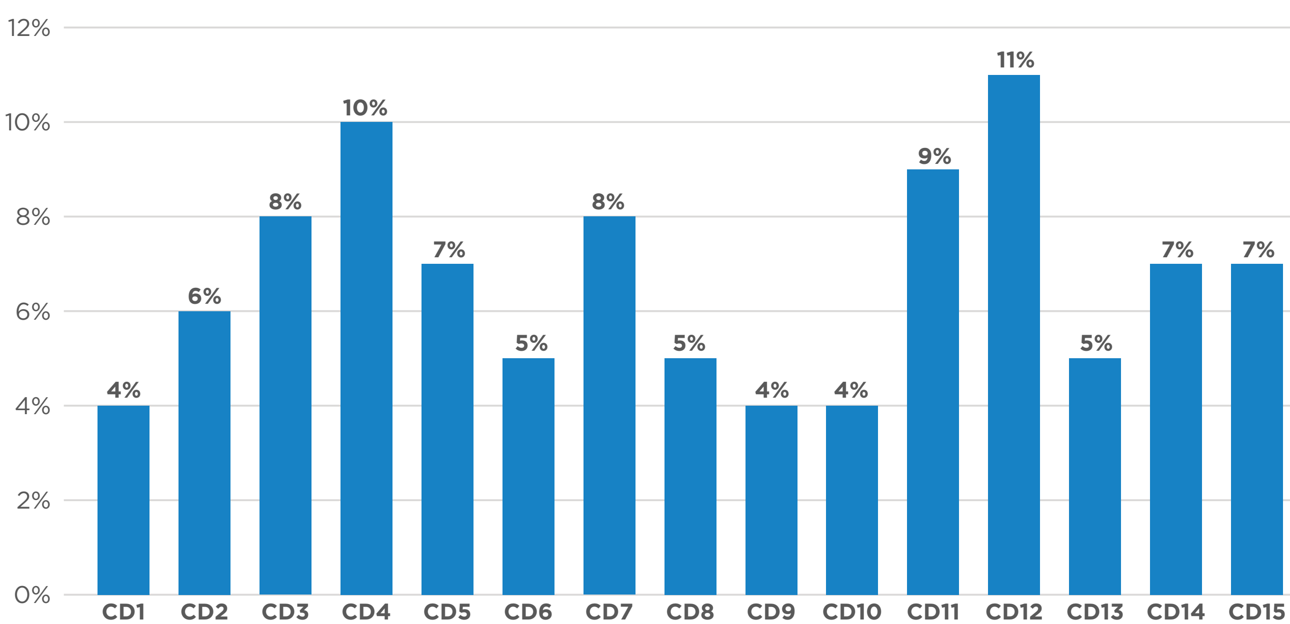
Council Districts 8 and 9 have the highest amount of KSI collisions relative to their share of the roadway network. While each district represents approximately 3% of the roadway network, they account for 12% and 10% of all KSI parties, respectively.

Council District 8 accounts for the highest number of pedestrian-involved KSI collisions and vehicle-only KSI collisions in the City. Council District 9 accounts for the highest number of bike KSI collisions in the City.

KSI Collisions by Council District, 2017-2021



Share of Citywide Streets by Council District



Note: Mode-specific KSI will not sum to KSI total because a small number of collisions involve multiple modes (i.e. bicyclist, pedestrian, and/or motorcycle).

COVID-19 Analysis Summary

The COVID-19 Analysis explored the potential relationship between key public health orders, changes in travel patterns, and roadway safety outcomes during the COVID-19 pandemic. This Analysis explores the change in injury collision trends in pre- and post-COVID periods, geographic patterns in collision location changes, and includes systemic analysis of key roadway and contextual factors (i.e., 85th percentile speed, weekday ADT, intersection control, roadway classification, etc.). This analysis uses the same subset of collision data used for the Collision Landscape Summary and Systemic Analysis Summary, which includes all injury collisions for which there was sufficient data for geocoding and analysis.

The maps on the following pages show the corridor and intersection locations that experienced the largest change in KSI collisions between the pre-COVID-19 and COVID-19 data periods.

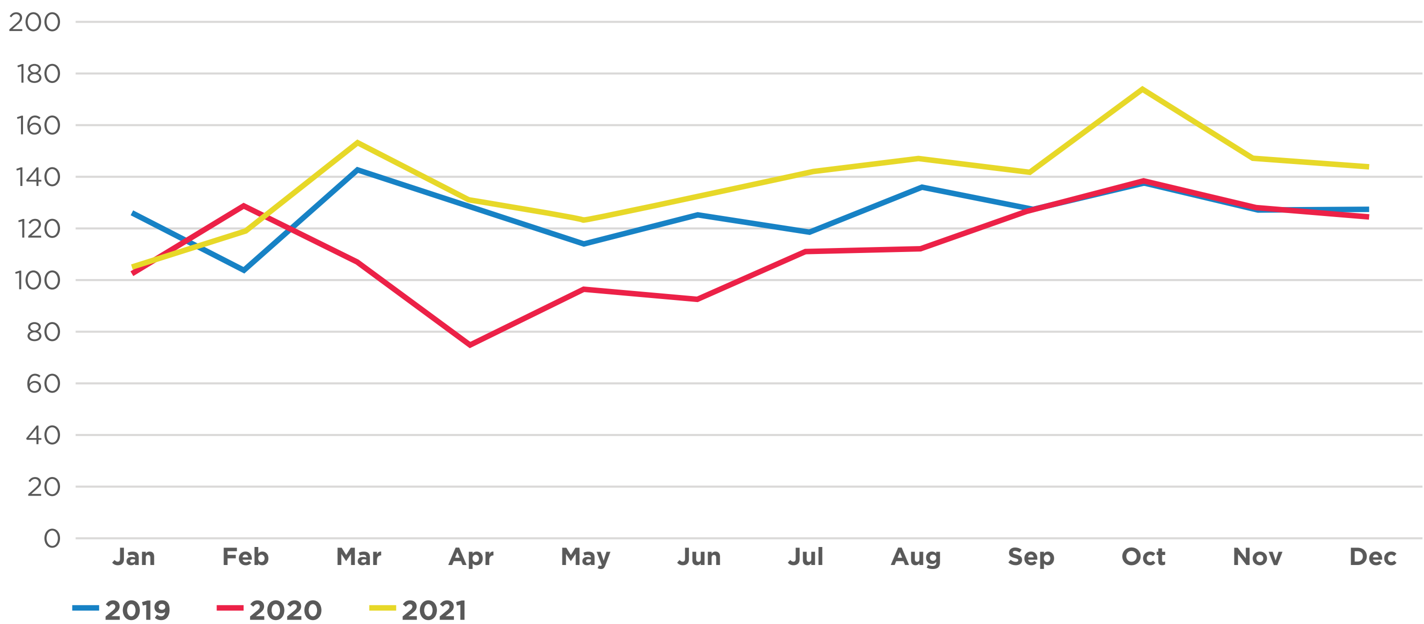
Key Findings

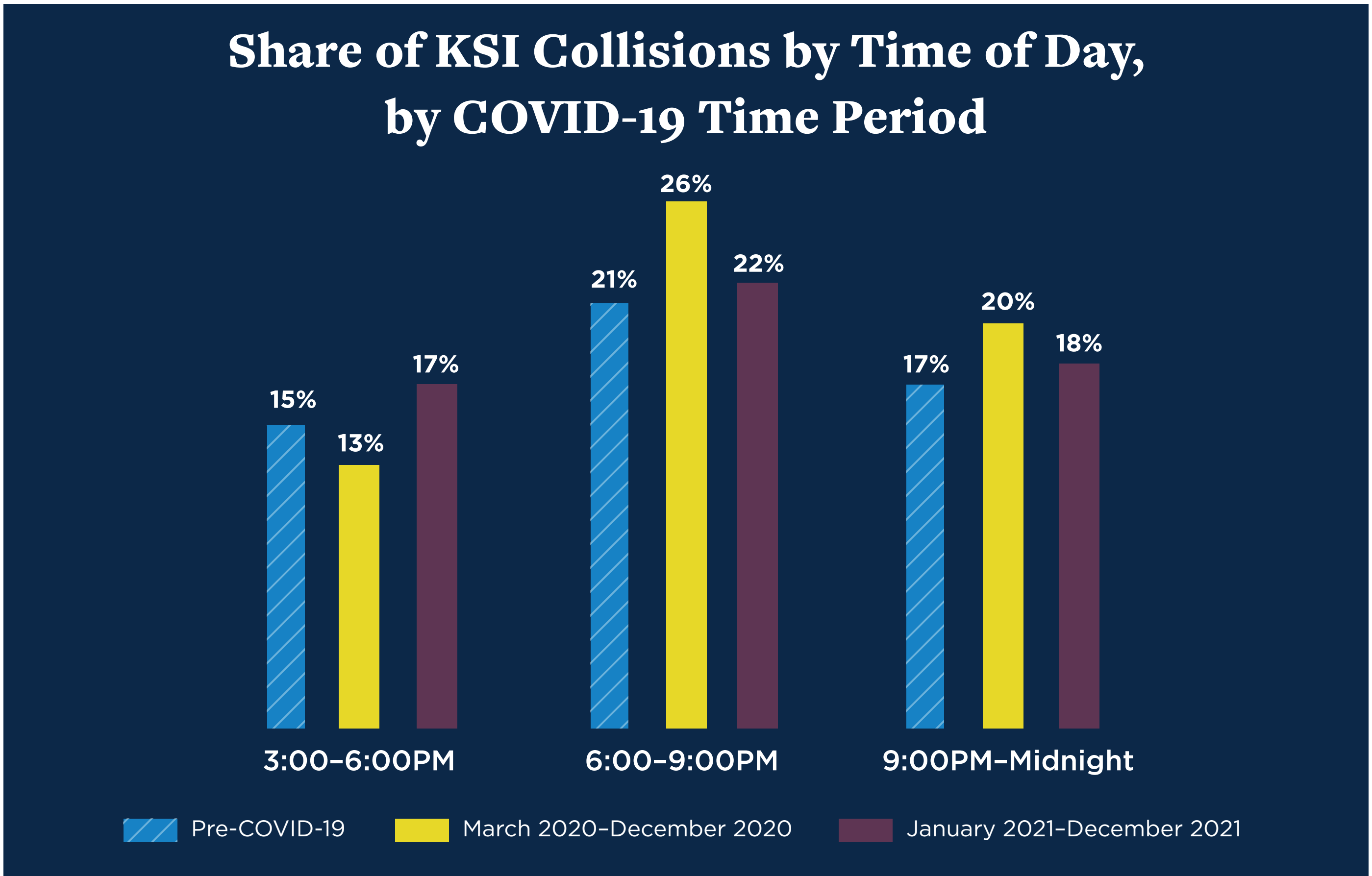
KSI collisions dropped significantly between March and April 2020 compared to the same period in 2019, but rose steadily between April and September 2020, when KSI collisions matched what was seen pre-COVID-19 in September 2019. For the remainder of 2020 (Oct-Dec), KSI collisions tracked closely with 2019 data. Starting in March 2021 and continuing through the remainder of the year, monthly KSI collision numbers were above pre-COVID-19 levels.

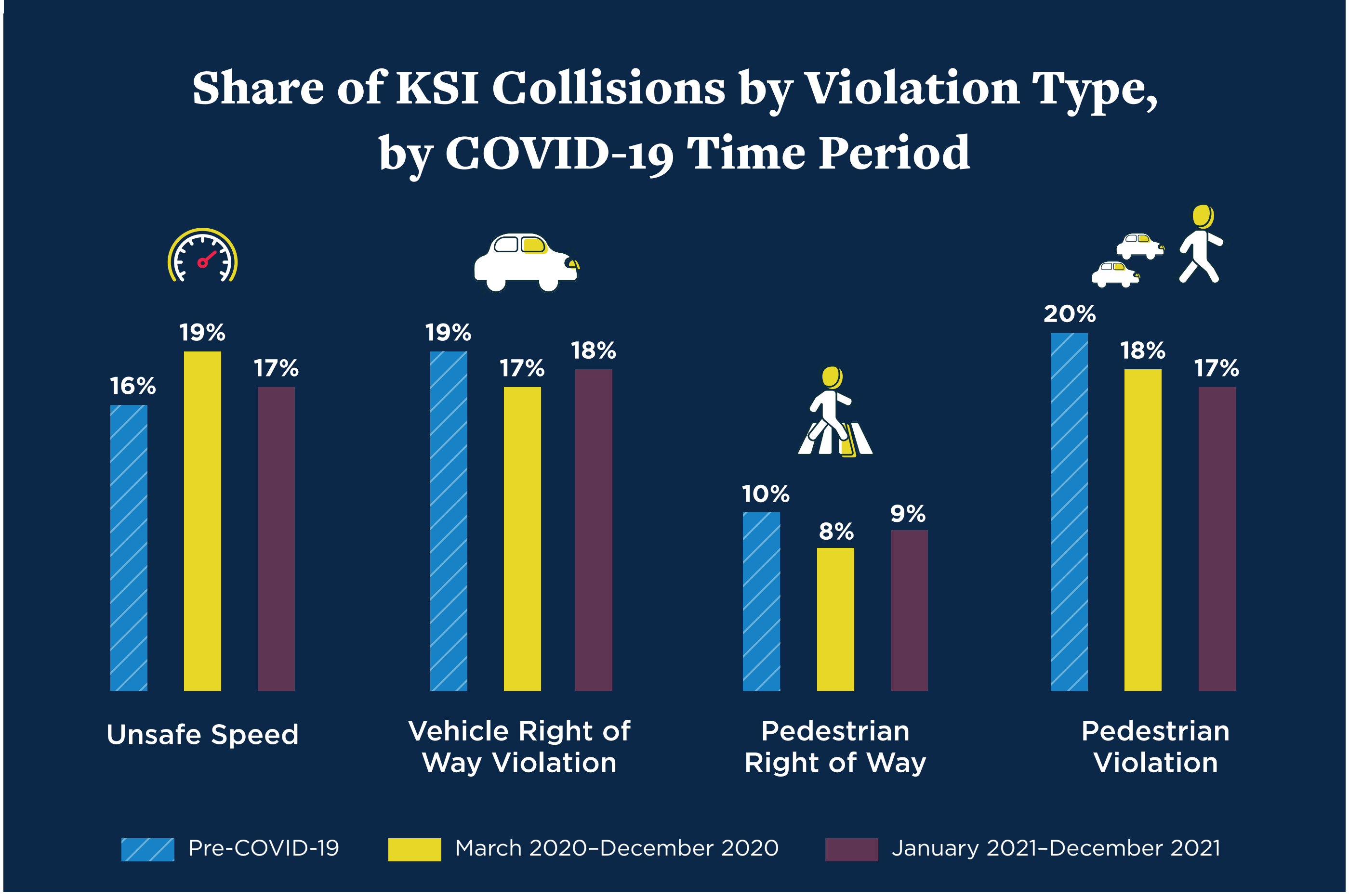
The share of citywide KSI collisions with Unsafe Speed as the primary violation rose from 16% pre-COVID-19 to 19% for the time period between March and December 2020.

KSI collisions occurred more frequently in the Evening (6 to 9 pm) and Night (9 pm to midnight) time periods in the 2020 COVID-19 data period, compared to the pre-COVID-19 data period. Though the share of KSI collisions in those time periods decreased in 2021, they remained higher than pre-COVID-19 levels.

KSI Collisions by Month, 2019-2021




Share of KSI Collisions by Time of Day, by COVID-19 Time Period
15%
13%
17%
21%
26%
22%
17%
20%
18%
3:00–6:00PM
6:00–9:00PM
9:00PM–Midnight
Pre-COVID-19
March 2020–December 2020
January 2021–December 2021


Share of KSI Collisions by Violation Type, by COVID-19 Time Period
16%
19%
17%
19%
17%
18%
10%
8%
9%
20%
18%
17%
Unsafe Speed
Vehicle Right of Way Violation
Pedestrian Right of Way
Pedestrian Violation
Pre-COVID-19
March 2020–December 2020
January 2021–December 2021

PRIORITY CORRIDORS

Change in KSI

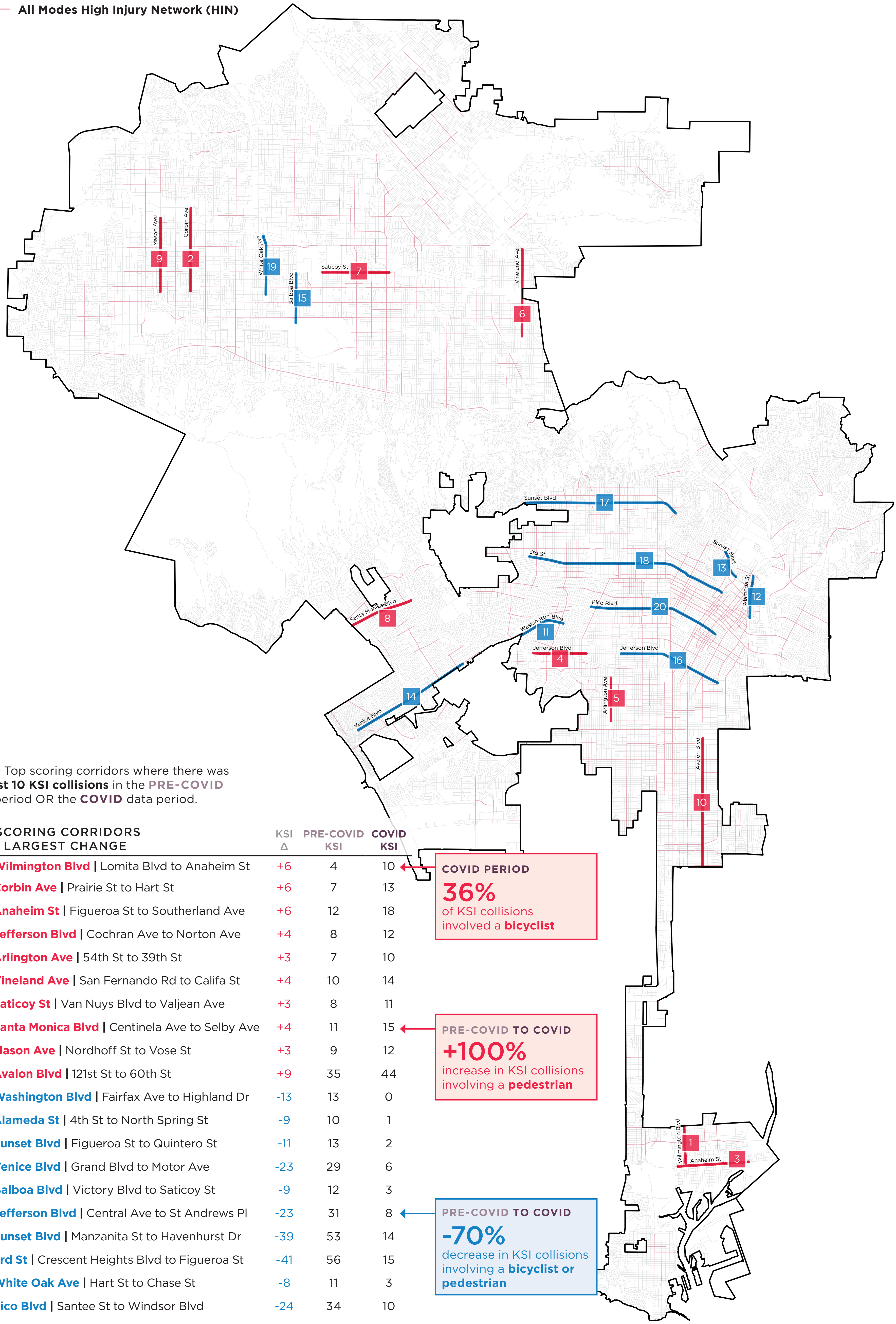
PRE-COVID
Jan 1, 2017 - Feb 29, 2020

COVID
Mar 1, 2020 - Dec 31, 2021

2017 2018 2019 2020 2021 2022

CHANGE FROM PRE-COVID TO COVID

- Increase in KSI Collisions
- Decrease in KSI Collisions
- All Modes High Injury Network (HIN)



*Note: Top scoring corridors where there was **at least 10 KSI collisions** in the PRE-COVID data period OR the COVID data period.

	TOP SCORING CORRIDORS WITH LARGEST CHANGE	KSI Δ	PRE-COVID KSI	COVID KSI
1	**Wilmington Blvd** | Lomita Blvd to Anaheim St	+6	4	10
2	**Corbin Ave** | Prairie St to Hart St	+6	7	13
3	**Anaheim St** | Figueroa St to Southerland Ave	+6	12	18
4	**Jefferson Blvd** | Cochran Ave to Norton Ave	+4	8	12
5	**Arlington Ave** | 54th St to 39th St	+3	7	10
6	**Vineland Ave** | San Fernando Rd to Califa St	+4	10	14
7	**Saticoy St** | Van Nuys Blvd to Valjean Ave	+3	8	11
8	**Santa Monica Blvd** | Centinela Ave to Selby Ave	+4	11	15
9	**Mason Ave** | Nordhoff St to Vose St	+3	9	12
10	**Avalon Blvd** | 121st St to 60th St	+9	35	44
11	**Washington Blvd** | Fairfax Ave to Highland Dr	-13	13	0
12	**Alameda St** | 4th St to North Spring St	-9	10	1
13	**Sunset Blvd** | Figueroa St to Quintero St	-11	13	2
14	**Venice Blvd** | Grand Blvd to Motor Ave	-23	29	6
15	**Balboa Blvd** | Victory Blvd to Saticoy St	-9	12	3
16	**Jefferson Blvd** | Central Ave to St Andrews Pl	-23	31	8
17	**Sunset Blvd** | Manzanita St to Havenhurst Dr	-39	53	14
18	**3rd St** | Crescent Heights Blvd to Figueroa St	-41	56	15
19	**White Oak Ave** | Hart St to Chase St	-8	11	3
20	**Pico Blvd** | Santee St to Windsor Blvd	-24	34	10

COVID PERIOD
36%
of KSI collisions involved a **bicyclist**

PRE-COVID TO COVID
+100%
increase in KSI collisions involving a **pedestrian**

PRE-COVID TO COVID
-70%
decrease in KSI collisions involving a **bicyclist or pedestrian**

PRIORITY INTERSECTIONS

Change in KSI

PRE-COVID
Jan 1, 2017 - Feb 29, 2020

COVID
Mar 1, 2020 - Dec 31, 2021

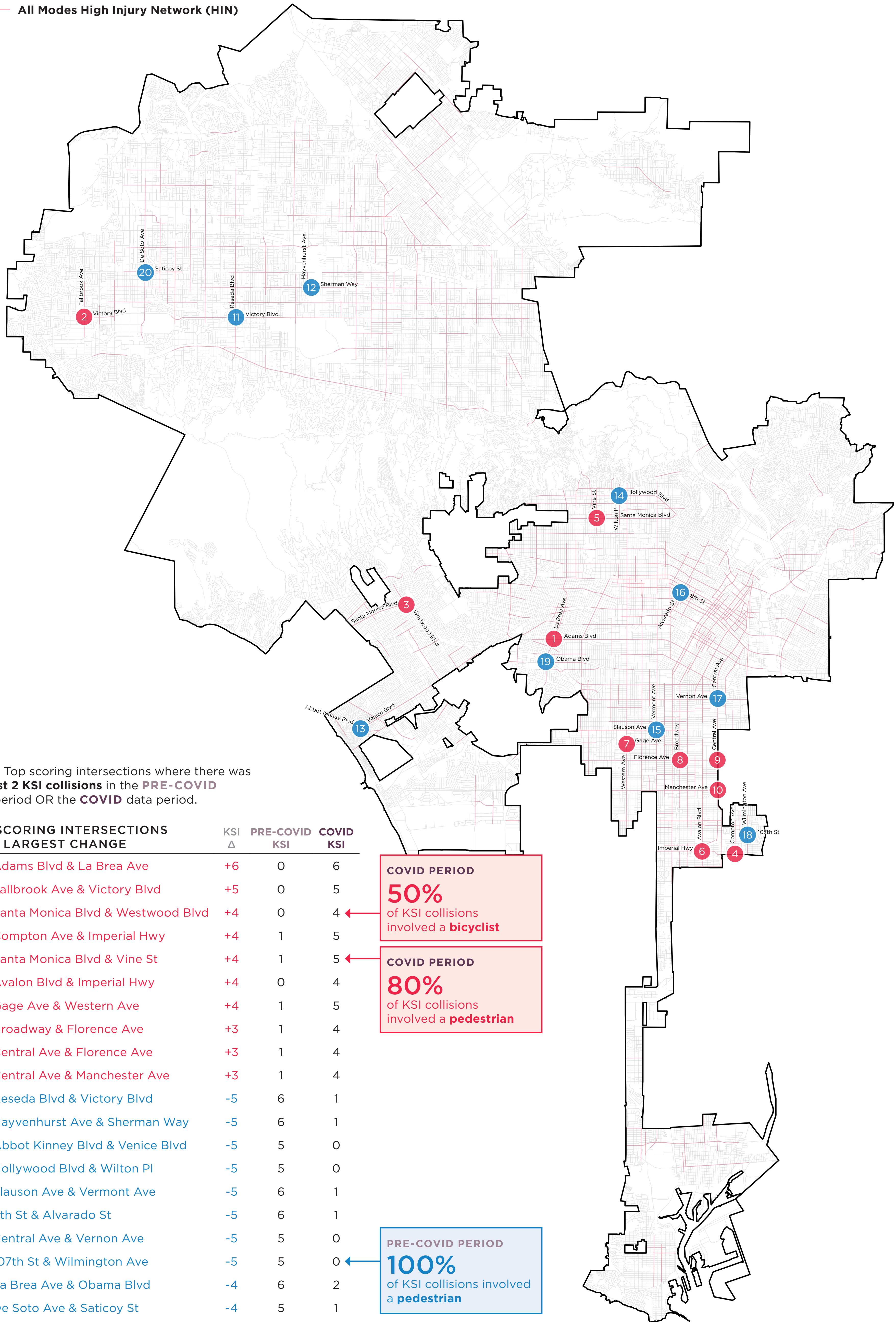
2017 2018 2019 2020 2021 2022

CHANGE FROM PRE-COVID TO COVID

Increase in KSI Collisions

Decrease in KSI Collisions

All Modes High Injury Network (HIN)



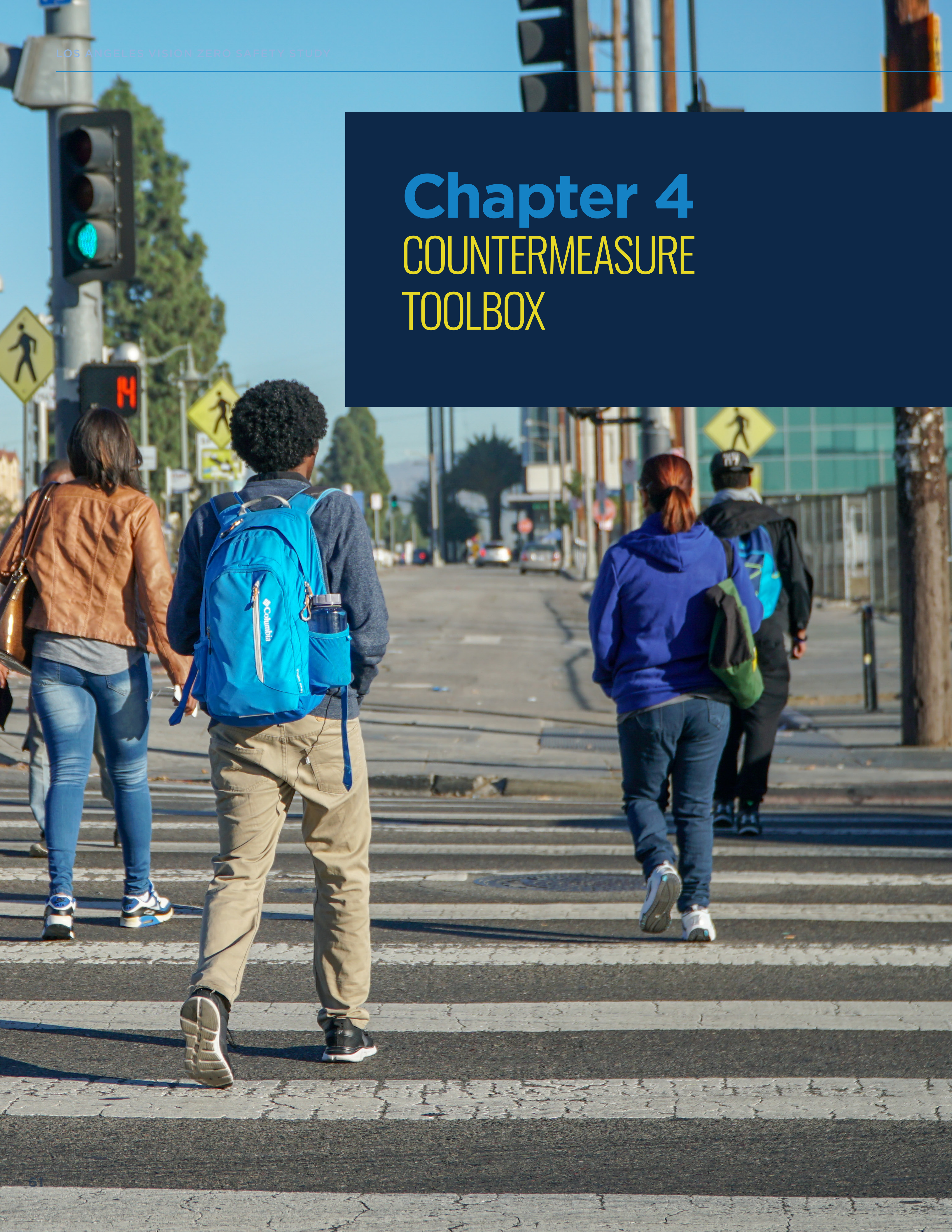
*Note: Top scoring intersections where there was **at least 2 KSI collisions** in the PRE-COVID data period OR the COVID data period.

	TOP SCORING INTERSECTIONS WITH LARGEST CHANGE	KSI Δ	PRE-COVID KSI	COVID KSI
1	Adams Blvd & La Brea Ave	+6	0	6
2	Fallbrook Ave & Victory Blvd	+5	0	5
3	Santa Monica Blvd & Westwood Blvd	+4	0	4
4	Compton Ave & Imperial Hwy	+4	1	5
5	Santa Monica Blvd & Vine St	+4	1	5
6	Avalon Blvd & Imperial Hwy	+4	0	4
7	Gage Ave & Western Ave	+4	1	5
8	Broadway & Florence Ave	+3	1	4
9	Central Ave & Florence Ave	+3	1	4
10	Central Ave & Manchester Ave	+3	1	4
11	Reseda Blvd & Victory Blvd	-5	6	1
12	Hayvenhurst Ave & Sherman Way	-5	6	1
13	Abbot Kinney Blvd & Venice Blvd	-5	5	0
14	Hollywood Blvd & Wilton Pl	-5	5	0
15	Slauson Ave & Vermont Ave	-5	6	1
16	8th St & Alvarado St	-5	6	1
17	Central Ave & Vernon Ave	-5	5	0
18	107th St & Wilmington Ave	-5	5	0
19	La Brea Ave & Obama Blvd	-4	6	2
20	De Soto Ave & Saticoy St	-4	5	1

COVID PERIOD
50%
of KSI collisions involved a **bicyclist**

COVID PERIOD
80%
of KSI collisions involved a **pedestrian**

PRE-COVID PERIOD
100%
of KSI collisions involved a **pedestrian**



Chapter 4
COUNTERMEASURE TOOLBOX

This analysis identified key collision and contextual factors that contribute to an outsized share of severe and fatal collisions in the City of Los Angeles. This chapter summarizes work completed to pair these factors with roadway design and other engineering safety strategies that have been shown to improve roadway safety outcomes. Many of these strategies are already part of LADOT's roadway safety toolbox, but this chapter introduces new strategy options as well.

Safety Countermeasures

Pairing Countermeasures

Countermeasures are safety strategies that can be implemented to address specific crash trends, high-risk factors, or other identified deficiencies. This report focuses on engineering or roadway design countermeasure options for LADOT. For each Collision Profile, we identified a number of countermeasure solutions specifically aimed at the collision or roadway and built environment factors present within that Collision Profile. The table on the following page provides a summary of the countermeasure pairing exercise.

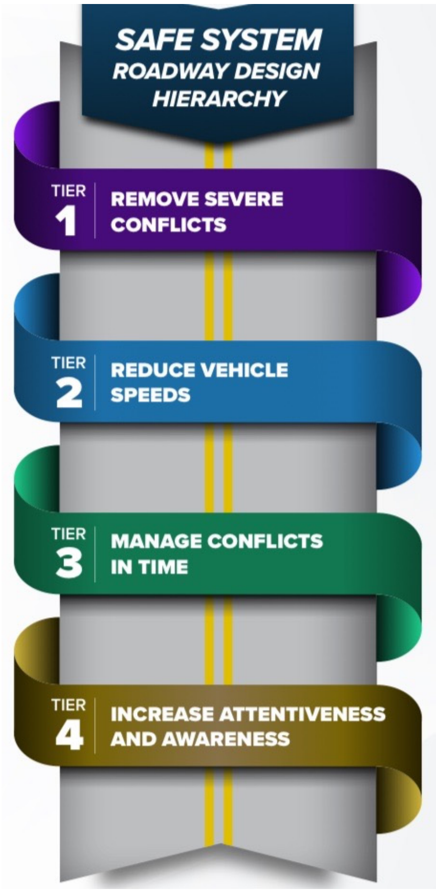
Countermeasures that are not currently part of LADOT's existing toolbox, or countermeasures where updated information was available, are included in this chapter.
Each countermeasure includes a description, as well as a summary of efficacy research and high-level cost considerations. These strategies are intended to supplement LADOT's existing toolbox.

Efficacy Research and Local Evaluation

In addition to a review of national research on safety efficacy of countermeasures, this analysis also included an evaluation of projects previously installed by LADOT, to understand the impact of countermeasures on roadway safety in Los Angeles. The findings from that evaluation helped to inform the countermeasure recommendations in this chapter.

Incorporating the Safe System Approach

FHWA recently released their Safe System Design Hierarchy report, which outlines the four tiers of countermeasure strategies that LADOT can apply to top scoring locations and Collision Profiles. The countermeasures outlined in the Countermeasure Pairing Matrix apply these principles.



Source:
FHWA *Safe System Roadway Design Hierarchy* Report

Collision Profile & Countermeasure Pairing Summary

	Enhanced Crossing, Mid-Block	Enhanced Crossing, Non-Signalized Intersection	Enhanced Crossing, Signal	Reduce Vehicle Speeds	Neighbor-hood Traffic Calming	Protected Bicycle Facility, segment	Protected Bicycle Facility, intersection	Improve Access Management	Improve Turns at Non-Signalized Locations	Improve Turns at Signals	Improved Transit Facilities	Improved Pedestrian Facilities	Roadway Improve-ments	Improved Non-Signalized Locations
Profile 1: Roads with 40-50 MPH Speeds in Dark Conditions (Street Lights Present)	■	■		■										
Profile 2: Bicyclists Hit by Drivers Proceeding Straight on Streets with ADT between 10k and 20k						■								
Profile 3: Bicyclists Hit by Drivers Proceeding Straight at Major Unsignalized Intersections							■							
Profile 4: Bicyclists Hit by Drivers Proceeding Straight On Roadways with 40-50 MPH Speeds				■		■								
Profile 5: Bicyclists Hit Broadside Adjacent to Residential Land Use					■									
Profile 6: Motorcyclists Hit Broadside On Roadways With 40-50 MPH Speeds				■				■						
Profile 7: Motorcyclists Hit by Drivers Turning Left at Major Signals with No Fully Protected Lefts										■				
Profile 8: Motorcyclists Hit by Drivers Turning Left at Major Unsignalized Intersections									■					
Profile 9: Pedestrians Hit between the Hours of 9 PM and 6 AM with No Marked Crosswalk	■													
Profile 10: Pedestrians Hit When Crossing Not in a Crosswalk at Major Unsignalized Intersections		■												
Profile 11: Pedestrians Hit When Crossing Not in a Crosswalk at Major Signals with No Fully Protected Lefts			■							■				
Profile 12: Pedestrians Hit Near Transit Stops between 9 PM and Midnight	■										■			
Profile 13: Pedestrians Age 65+ Hit on Streets Designated as Pedestrian Enhanced Districts	■	■	■									■		
Profile 14: Pedestrians Hit by Drivers Proceeding Straight Near Schools				■								■		
Profile 15: Pedestrians Hit Near Parks in Dark Conditions (Street Lights Present)												■		
Profile 16: Head-On Vehicle Collisions Along Roadways in CA Disadvantaged Communities													■	
Profile 17: Vehicle Collisions Along Truck Routes that Result from Unsafe Speed Violations				■										
Profile 18: Vehicles Collisions at Major Unsignalized Intersections in Dark Conditions (Street Lights Present)														■
Profile 19: Bicycles Collisions with Wrong Side of the Road Violations on Streets with No Bicycle Facilities						■								
Profile 20: Pedestrians Hit by Drivers Turning Right at Major Signals			■											
Profile 21: Unsafe Speed Violation Collisions on Streets Designated as Neighborhood Enhanced Network					■									
Profile 22: Unsafe Speed Violation Collisions Near Schools				■		■						■		
Profile 23: Vehicles Hitting Objects at Major Unsignalized Intersections				■										■
Profile 24: Pedestrians Hit while Crossing in Crosswalks on Roads Classified as Avenue I or II			■	■										

Countermeasure Toolbox Additions

The following countermeasures represents a series of additions to the established LADOT Vision Zero Toolkit of countermeasures. In many instances countermeasures have already been in use in recent Vision Zero projects, while others reflect potential additions to future safety projects. In several instances, additional detail is provided for countermeasures already in the toolkit, per staff request.

Matching Collision Profiles have been provided for each countermeasure, reflecting the citation of each item in the Countermeasure Pairing Matrix, where they have been paired with other improvements in the existing Vision Zero Toolkit. Crash Reduction Factors have been cited from the CA Local Roadway Safety Manual (LRSM) where possible and supplemented from the FHWA CMF Clearinghouse where unavailable.

Due to fluctuating countermeasure costs and cost escalations, costs are presented according to the approximate ranges listed below.

- *Low*: Typically $50,000 dollars or less
- *Moderate*: Typically $50,000 to $100,000
- *Medium*: Typically $100,000 to $250,000
- *High*: Typically $250,000 or more

Countermeasures included in the LRSM and used in the HSIP Analyzer tool are designated with this icon.

Speed & Traffic Management

Access Control/Diverter

Saint Paul, MN

Relevant Collision Profiles:

- Bicyclists hit by drivers proceeding straight at major unsignalized intersections
- Bicyclists hit broadside adjacent to residential land use
- Motorcyclists hit broadside on roadways with 40-50 mph speeds
- All collisions that result from unsafe speeds along roadways designated as Neighborhood Enhanced Network

Contexts:

Applicable where a neighborhood or local street intersects a collector or arterial street and through and/or turning movement must be restricted due to multiple turning collisions.

DESCRIPTION

An island placed at a neighborhood street intersection that discourages or prevents drivers from cutting through neighborhood streets, to decrease traffic and promote street use for other road user types. Diverters still allow access for people walking or bicycling.

COMPONENTS

- Raised curb island

EFFECTIVENESS

Not yet determined

COST

Medium

Speed & Traffic Management

Adjust Speed Limit

Relevant Collision Profiles:

- Roads with 40-50 mph speeds where street lights are present during dark hours
- Bicyclists hit by drivers proceeding straight on roadways with 40-50 mph speeds
- Motorcyclists hit broadside on roadways with 40-50 mph speeds
- Pedestrians hit by drivers proceeding straight along roadways near schools
- Vehicle collisions along truck routes that result from unsafe speeds
- All collisions that result from unsafe speeds along roadways near schools
- Vehicle collisions where an object was hit at major unsignalized intersections
- Pedestrians hit when crossing in crosswalks on roads classified as Avenue I or II

Contexts:

Reductions of 5 mph allowed per AB43 in areas designated “Safety Corridors” or areas with high bicyclist and pedestrian activity. Limits of 20/25 may be established in business districts.

DESCRIPTION

Adjustments made to existing speed limits to lower a corridor’s marked speed and better match land use and safety contexts.

COMPONENTS

- Updated speed limit signage

EFFECTIVENESS

Expected reduction in all crashes by 14% (.86 CMF)

Source: Seung-Oh et al, 2022

COST

Low

Speed & Traffic Management

Automated Speed Cameras

Relevant Collision Profiles:

- Roads with 40-50 mph speeds where streetlights are present during dark hours
- Vehicle collisions along truck routes that result from unsafe speeds
- Bicyclists hit by drivers proceeding straight on roadways with 40-50 mph speeds
- Motorcyclists hit broadside on roadways with 40-50 mph speeds
- Pedestrians hit by drivers proceeding straight along roadways near schools
- All collisions that result from unsafe speeds along roadways near schools
- Vehicle collisions where an object was hit at major unsignalized intersections
- Pedestrians hit when crossing in crosswalks on roads classified as Avenue I or II

Contexts:

Applicable on local, collector, and arterial roads where speeding is a concern, especially near high pedestrian, bicyclist, and transit land uses like schools, parks, and transit centers. System is provisional in LA through 2032 via AB 645.

DESCRIPTION

Automated cameras increase road safety and reduce speeding behaviors through enforcement of speed limits.

COMPONENTS

- Mounted camera
- Advance signage recommended near first camera in corridor

EFFECTIVENESS

Expected reduction in all crashes on arterial roadways by 54% (.56 CMF)

Source: Shin, et al, 2009

COST

Medium

Speed & Traffic Management

Chicane

Seattle, WA

Relevant Collision Profiles:

- Bicyclists hit broadside adjacent to residential land use
- All collisions that result from unsafe speeds along roadways designated as Neighborhood Enhanced Network

Contexts:

Chicanes are applicable on neighborhood or local streets with speed limits of 25 mph or below, where speeding is a concern. They are typically applied in a midblock location.

DESCRIPTION

A curve introduced to a local road made of curb extensions or islands, reducing traffic speeds through horizontal deflection.

COMPONENTS

- Concrete curb extension, or island
- Landscaping (optional, low to maintain visibility)

EFFECTIVENESS

Exact effectiveness not yet determined, though research indicates chicanes may reduce pedestrian injury crashes by 40%

Source: Distefano and Leonardi, 2019

COST

Moderate

Speed & Traffic Management

Mini Roundabout

Relevant Collision Profiles:

- Roads with 40-50 mph speeds where streetlights are present during dark hours
- Bicyclists hit by drivers proceeding straight on roadways with 40-50 mph speeds
- Motorcyclists hit broadside on roadways with 40-50 mph speeds
- Pedestrians hit by drivers proceeding straight along roadways near schools
- Vehicle collisions along truck routes that result from unsafe speeds
- Vehicle collisions along truck routes that result from unsafe speeds
- All modes and unsafe speeds near schools
- Vehicle collisions where an object was hit at major unsignalized intersections
- Pedestrians hit when crossing in crosswalks on roads classified as Avenue I or II

Contexts:

Applicable on local street intersections where speeding is a concern, and where a full-sized roundabout is not appropriate due to roadway design.

DESCRIPTION

A smaller roundabout treatment with single-lane traffic and splitter islands for uncontrolled intersections.

COMPONENTS

- Raised roundabout island with traversable curb
- Curb or painted splitter islands on approaches
- Yield markings
- Continental crosswalk offset from intersection

EFFECTIVENESS

Effectiveness varies: Expected to reduce crashes by 12-78% when converting an intersection from all-way stop (.88 - .22 CMF). ‘

Source: CA LRSM 2020/FHWA CMF Clearinghouse

COST

Medium - High

Speed & Traffic Management

Neighborhood Traffic Circle

Relevant Collision Profiles:

- Bicyclists hit broadside adjacent to residential land use
- Vehicles collisions at major unsignalized intersections where streetlights are present during dark hours
- All collisions that result from unsafe speeds along roadways designated as Neighborhood Enhanced Network
- Vehicle collisions where an object was hit at major unsignalized intersections

Contexts:

Applicable on neighborhood streets where a full-size or mini roundabout is not appropriate.

DESCRIPTION

A concrete raised circle island placed within an unsignalized intersection that reduces vehicle speeds in residential areas through horizontal deflection.

COMPONENTS

- Concrete curb circle with mountable apron
- Directional signage
- Bollards and signage (interim treatment)

EFFECTIVENESS

Not yet determined

COST

Medium

Speed & Traffic Management

Roundabout

Seattle, WA

Relevant Collision Profiles:

- Roads with 40-50 mph speeds where streetlights are present during dark hours
- Bicyclists hit by drivers proceeding straight on roadways with 40-50 mph speeds
- Motorcyclists hit broadside on roadways with 40-50 mph speeds
- Pedestrians hit by drivers proceeding straight along roadways near schools
- Vehicle collisions along truck routes that result from unsafe speeds
- Vehicles collisions at major unsignalized intersections where streetlights are present during dark hours
- All collisions that result from unsafe speeds along roadways near schools
- Vehicle collisions where an object was hit at major unsignalized intersections
- Pedestrians hit when crossing in crosswalks on roads classified as Avenue I or II

Contexts:

Applicable on collector and arterial intersections where speeding is a concern and/or there is a high volume of pedestrians and bicyclists. A roundabout can be used in place of traffic signals.

DESCRIPTION

A roundabout reduces speeds and the number of conflict points at intersections while maintaining efficient traffic operations.

COMPONENTS

- Concrete island
- Guidance signage
- Splitter islands at approaches

EFFECTIVENESS

Effectiveness varies: Roundabouts are expected to reduce crashes by 12-78% when converting an intersection from all-way stop (.88 – .22 CMF). They are expected to reduce all crash types by 35-67% when converting an intersection from a signal (.65-.33 CMF).

Source: CA LRSM 2020 / FHWA CMF Clearinghouse

COST

High

Speed & Traffic Management

Speed Cushions

Relevant Collision Profiles:

- Bicyclists hit broadside adjacent to residential land use
- All collisions that result from unsafe speeds along roadways designated as Neighborhood Enhanced Network

Contexts:

The treatment is best applied on local streets, where vehicle speeds are lower (25 miles per hour or lower), and along bicycle routes.

DESCRIPTION

Speed cushions are a variation of speed humps, where wheel cutouts are used to allow wider vehicles such as buses and emergency vehicles to pass through without slowing.

COMPONENTS

- Raised asphalt
- Chevron markings

EFFECTIVENESS

A definitive measure of effectiveness for speed cushions has not been determined.

Research indicates speed cushions, humps, and tables reduce crash severity.

Source: Elvik et al, 2004

COST

Moderate

Speed & Traffic Management

Speed Humps

Relevant Collision Profiles:

- Bicyclists hit broadside adjacent to residential land use
- All collisions that result from unsafe speeds along roadways designated as Neighborhood Enhanced Network

Contexts:

The treatment is best applied on local streets, where vehicle speeds are lower (25 miles per hour or lower).

DESCRIPTION

Speed humps are raised sections of asphalt that create vertical deflection to slow vehicles.

COMPONENTS

- Raised asphalt humps
- Advance chevrons
- Signage

EFFECTIVENESS

A definitive measure of effectiveness for speed cushions has not been determined. Research indicates speed humps, cushions, and tables reduce crash severity.

Source: Elvik et al., 2004;

COST

Moderate

Bicycle Facilities

Contraflow Bike Lane

Relevant Collision Profiles:

- Bicyclists hit by drivers proceeding straight on streets with ADT between 10K and 20K
- Bicyclists hit by drivers proceeding straight on roadways with 40-50 mph speeds
- Bicycles hit on roadways where there are no on-street bike facilities and traveling on the wrong side of the road
- All collisions that result from unsafe speeds along roadways near schools

Contexts:

Contraflow lanes are applicable on one-way local or collector streets that have additional space, either from a road diet or removal of parking, where the addition of a contraflow lane would benefit the bicycle network and reduce wrong-direction bicycling. Buffer space and/or vertical protection is recommended.

DESCRIPTION

Striped bike lane provides dedicated, on-road space for opposite direction bicycle travel on one-way streets.

COMPONENTS

- Striping
- Directional signage
- Intersection controls (bicycle signal)
- Buffer or vertical separation (recommended)

EFFECTIVENESS

Bike lane installation is expected to reduce bicyclist and pedestrian crashes by 35% (.65 CMF). Contraflow treatment is not specified in the LRSM.

Source: CA LRSM 2020

COST

Low – Moderate, varies due to resurfacing requirements

Bicycle Facilities

Green Bicycle Conflict Striping

Relevant Collision Profiles:

- Bicyclists hit by drivers proceeding straight on streets with ADT between 10K and 20K
- Bicyclists hit by drivers proceeding straight at major unsignalized intersections
- Bicyclists hit by drivers proceeding straight on roadways with 40-50 mph speeds
- Bicycles hit on roadways where there are no on-street bike facilities and traveling on the wrong side of the road
- All collisions that result from unsafe speeds along roadways near schools

Contexts:

Applicable on mid- to high-volume streets, with speed limits of 25 mph or above, where a bicycle facility crosses an intersection or driveway where there may be a conflict with vehicles.

DESCRIPTION

Green pavement markings placed at specific locations such as bicycle boxes, intersection crossings, driveways, and other potential conflict areas on bike facilities, supplementing existing on-street bike lanes.

COMPONENTS

- Linear dashed or solid green striping

EFFECTIVENESS

Expected to reduce crashes at intersections by 10% (.90 CMF)

Source: Fehr and Peers Efficacy Guide, 2018

COST

Low

Protected Bike Lane-Material Treatments

The below treatment supplement the Class IV Protected Bike Lane treatment, providing additional treatment options for the manner at which separation between bicyclists and vehicle traffic is created.

Relevant Collision Profiles:

- Bicyclists hit by drivers proceeding straight on streets with ADT between 10K and 20K
- Bicyclists hit by drivers proceeding straight on roadways with 40-50 mph speeds
- Bicycles hit on roadways where there are no on-street bike facilities and traveling on the wrong side of the road
- All collisions that result from unsafe speeds along roadways near schools

Contexts:

Applicable for high-volume, high-speed streets, and/or locations with multiple bicycle-involved collisions.

Bicycle Facilities *Protected Bike Lane-Material Treatments*

Raised Lane

Santa Monica, CA

DESCRIPTION

A Class IV bike lane raised to sidewalk level, or to a half-level between the street and sidewalk grades, to separate bicyclists from vehicular traffic. A raised protected bike lane is typically located between the sidewalk and curb.

COMPONENTS

- Raised concrete or asphalt path
- Pavement markings
- Advisory signage

EFFECTIVENESS

Not yet determined.

COST

High

Bicycle Facilities *Protected Bike Lane-Material Treatments*

Concrete Curb

Santa Monica, CA

DESCRIPTION

Concrete curb used to provide physical separation between the bicycle lane and travel lane.

COMPONENTS

- Raised concrete curb or pre-cast concrete barriers (cost may vary by type)
- Pavement markings
- Advisory signage

EFFECTIVENESS

Not yet determined.

COST

Medium - High

Bicycle Facilities *Protected Bike Lane-Material Treatments*

Flexible Delineator Posts

DESCRIPTION

Plastic delineator posts used to create vertical separation between the bicycle lane and travel lane. Recommended as an interim treatment or in locations where vehicle intrusion into the bicycle lane is not likely.

COMPONENTS

- Flexible plastic bollards
- Pavement markings
- Advisory signage

EFFECTIVENESS

Expected to reduce vehicle-bicycle crashes by 22-50% when converting a traditional bike lane to flexible posts (.78 - .50 CMF).

Source: Dixon et al, 2023

COST

Medium

Protected Intersection - Composite Elements

Protected intersections slow turning vehicles and reduce conflicts between pedestrians, bicyclists, and other vehicles. Bikeways are offset from the general purpose lanes to make people biking more visible and provide them the right-of-way over vehicles. A number of discrete elements work together to support protected intersections.

Relevant Collision Profiles:

- Bicyclists hit by drivers proceeding straight at major unsignalized intersections

Contexts:

Applicable for high-volume, high-speed streets, and/or locations with multiple bicycle-involved collisions.

Bicycle Facilities *Protected Intersection Elements*

Bicycle Queue/Setback Area

Vancouver, BC, Canada

DESCRIPTION

A designated area for bicyclists to queue ahead of the travel lane stop line, improving the visibility of bicyclists at the intersection to drivers.

COMPONENTS

- Green paint/striping
- Stop bar

EFFECTIVENESS

Not yet determined.

COST

Low

Bicycle Facilities *Protected Intersection Elements*

Corner Island

Santa Monica, CA

DESCRIPTION

A raised concrete curb that reduces the turning radius for vehicles at the intersection and provides a physical barrier between the bicycle and pedestrian queuing areas.

COMPONENTS

- Concrete raised curb
- Can be combined with a truck apron

EFFECTIVENESS

Not yet determined.

City of LA evaluation for concrete curb extensions found a 45% reduction in pedestrian injury crashes and 41% in pedestrian KSI crashes (note: KSI data was limited).

COST

Medium

Pedestrian Facilities

All-Pedestrian Signal Phase

(non-scramble)

Relevant Collision Profiles:

- Pedestrians hit when not crossing in crosswalks at major signals with no protected lefts
- Pedestrians 65+ hit along roadway segments designated as Pedestrian Enhanced Districts
- Pedestrians hit by drivers turning right at major signals
- Pedestrians hit when crossing in crosswalks on roads classified as Avenue I or II

Contexts:

Applicable in areas with heavy pedestrian volumes and low vehicle speeds and volumes.

DESCRIPTION

A pedestrian walk phase on all legs of an intersection allowing pedestrian crossings without vehicular conflicts, but not including diagonal crossings.

COMPONENTS

- Signal phasing
- Pedestrian signals, all legs

EFFECTIVENESS

Expected to reduce crashes of all types by 5% (.95 CMF), and by 35% for vehicle/pedestrian crashes (.65 CMF)

Source: Chen et al, 2013

COST

Low

Pedestrian Facilities

Sidewalk / Repair Sidewalk

Relevant Collision Profiles:

- Pedestrians 65+ hit along roadway segments designated as Pedestrian Enhanced Districts
- Pedestrians hit by drivers proceeding straight along roadways near schools
- Pedestrian-involved crashes on dark streets near a park
- Crashes involving all modes and unsafe speeds near schools

Contexts:

Applicable on all streets. Prioritize implementation where there are high pedestrian-generating land use contexts like schools, offices, and transit centers.

DESCRIPTION

Installation or repair of sidewalk allows pedestrians a space along the roadway separate from vehicles.

COMPONENTS

- Sidewalk installation, repair
- Curb ramps, truncated domes

EFFECTIVENESS

Installation of new sidewalk where none exist previously is expected to reduce pedestrian- and bicyclist-involved crashes by 80% (.20 CMF)

Source: CA LRSM 2020

COST

Moderate - Medium

Transit Facilities

Bus Stop Street Lighting

Minneapolis, MN

Relevant Collision Profiles:

- Pedestrians hit near transit stops between 9 pm-midnight
- Pedestrians 65+ hit along roadway segments designated as Pedestrian Enhanced Districts
- Pedestrians hit by drivers proceeding straight along roadways near schools
- Pedestrians hit along roadways near parks where streetlights are present during dark hours
- All collisions that result from unsafe speeds along roadways near schools

Contexts:

Applicable at bus stops that do not already have pedestrian-scale lighting, and stops with histories of night-time pedestrian-involved crashes.

DESCRIPTION

Pedestrian-level lighting near transit stops increases visibility for transit users as well as drivers' ability to see them.

COMPONENTS

- Pedestrian-level street lighting

EFFECTIVENESS

Installation of intersection lighting is expected to reduce night crashes by 40% (.60 CMF). Note: bus stop lighting is not specified in the LRSM and was not evaluated for crash reduction.

Source: CA LRSM 2020

COST

Medium

Crossings & Signals

Protected Right Turn Phase

Relevant Collision Profiles:

- Pedestrians hit by drivers turning right at major signals

Contexts:

Applicable at signalized intersections where pedestrian and right turning movements conflict.

DESCRIPTION

Reduces conflicts between pedestrian and turning vehicles by allowing drivers to make a right turn separate from the pedestrian walk phase.

COMPONENTS

- Signal phasing

EFFECTIVENESS

Not yet determined.

COST

Medium

Crossings & Signals

Retroreflective Signal Backplates

Relevant Collision Profiles:

- Roads with 40-50 mph speeds where streetlights are present during dark hours
- Pedestrians hit by drivers turning right at major signals
- Motorcyclists hit when a party turns left at major signals with no protected lefts
- Pedestrians hit when not crossing in crosswalks at major signals with no protected lefts

Contexts:

Apply at major signalized intersections, prioritizing Boulevards I/II and Avenues I/II, especially where lighting conditions may be poor.

DESCRIPTION

A retroreflective border added to traffic signals improves the visibility of the signal head to drivers during both the day and night. The yellow border, which may be 1-3 inches wide, enhances driver awareness of traffic signals.

COMPONENTS

- Replaced signal backplate
- Or: Retroreflective tape added to existing signal backplate

EFFECTIVENESS

Expected to reduce crashes by 15% (.85 CMF)

Source: CA LRSM 2020

COST

Low

Crossings & Signals

TOUCAN Signal

Denver, CO

Relevant Collision Profiles:

- Roads with 40-50 mph speeds where streetlights are present during dark hours
- Pedestrians hit between the hours of 9 pm-6 am where no crosswalk exists
- Pedestrians hit when not crossing in crosswalks at major unsignalized intersections
- Pedestrians hit near transit stops between 9 pm-midnight
- Pedestrians 65+ hit along roadway segments designated as Pedestrian Enhanced Districts
- Pedestrians hit along roadways near parks where streetlights are present during dark hours

Contexts:

TOUCAN signals are applicable for local/collector intersections at major roadways, where bicyclists and pedestrians are prioritized.

DESCRIPTION

A dedicated signal and intersection treatment that allows for pedestrian and bicyclist crossings only.

COMPONENTS

- Bicyclist queuing area, with curb protection
- Continental crosswalk
- Bicyclist detector loop
- Bicycle traffic signal heads
- Vehicle access restriction signage and striping (right turn only)

EFFECTIVENESS

Not yet determined.

COST

High

Other Road Design

Corridor Access Management

Relevant Collision Profiles:

- Motorcyclists hit broadside on roadways with 40-50 mph speeds
- Roads with 40-50 mph speeds where streetlights are present during dark hours
- Vehicle collisions along truck routes that result from unsafe speeds

Contexts:

Applicable on corridors where turning conflicts from multiple entry points and intersections are evident.

DESCRIPTION

Access management involves the regulation of conflict points and turns via restrictions on intersecting streets and turn lanes. Exact countermeasure types may vary per corridor context.

COMPONENTS

- Turn restriction signage
- Median islands restricting or allowing U-turns, left turns

EFFECTIVENESS

Depending on treatment type, expected to reduce crashes by 25 – 50% (.75-.50 CMF)

Source: CA LRSM 2020

COST

Varies by treatment type

Stop Sign / Stop Control

All-Way Stop Control

Relevant Collision Profiles:

- Vehicles collisions at major unsignalized intersections where streetlights are present during dark hours
- Vehicle collisions where an object was hit at major unsignalized intersections

Contexts:

Applicable at uncontrolled intersections of local and/or collector streets that do not meet a signal warrant, where multiple turning and/or head-on collisions have occurred.

DESCRIPTION

Installation of stop signs at all approaches of an intersection.

COMPONENTS

- Stop sign installation

EFFECTIVENESS

Expected to reduce crashes by 50% (.50 CMF) when converting a two-way stop control or yield control intersection.

Source: CA LRSM 2020

COST

Low

Stop Sign / Stop Control

Hardened Centerlines

Relevant Collision Profiles:

- Motorcyclists hit broadside on roadways with 40-50 mph speeds
- Head-on vehicle collisions along roadways in CalEnviroScreen disadvantaged communities
- Vehicles collisions at major unsignalized intersections where streetlights are present during dark hours
- Vehicle collisions where an object was hit at major unsignalized intersections

Contexts:

Hardened centerlines are applicable on collector and arterial roads where turning speeds are a concern and/or where multiple turning and/or head-on collisions have occurred.

DESCRIPTION

Raised curb bumps installed in the centerlines at the intersection reduce drivers turning speeds and guide them into correct lanes for more predictable turns.

COMPONENTS

- Raised plastic centerline humps
- Flexible delineator posts

EFFECTIVENESS

Raised medians are expected to reduce crashes by 46% (.54 CMF)

Source: Bahar et al, 2007

COST

Low

References

Bahar, G., M. Parkhill, E. Hauer, F. Council, B. Persaud, and C. Zegeer. “Parts I and II of a Highway Safety Manual: Knowledge Base for Part II.” 2007. (unpublished material from NCHRP Project 17-27).

Chen, L., Chen, C., Ewing, R., McKnight, C.E., Srinivasan, R., and Roe, M. “Safety Countermeasures and Crash Reduction in New York City - Experience and Lessons Learned.” *Accident Analysis and Prevention*, vol. 50, 2013, pp. 312-322

Distenfano, Natalia and Salvatore Leonardi, “Evaluation of the Benefits of Traffic Calming on Vehicle Speed Reduction.” *Civil Engineering and Architecture.* vol. 7, 2019, https://www.researchgate.net/publication/334249909_Evaluation_of_the_Benefits_of_Traffic_Calming_on_Vehicle_Speed_Reduction.

Dixon, K., R. Avelar-Moran, and M.M. Seyedeh. “Developing Crash Modification Factors for Separated Bicycle Lanes.” Report No. FHWA-HRT-23-078. Federal Highway Administration. McVean, VA, 2023.

Elvik, R. and Vaa, T., “Handbook of Road Safety Measures.” Oxford, United Kingdom, Elsevier, 2004.

Local Roadway Safety: A Manual for California’s Local Road Owners. California Department of Transportation, April 2020, https://dot.ca.gov/-/media/dot-media/programs/local-assistance/documents/hsip/2020/lrsm2020.pdf.

“Safety Efficacy Confidence Levels for Pedestrian & Bicycle Treatments.” Fehr & Peers, 2018, https://www.fehrandpeers.com/wp-content/uploads/2020/03/NACTO_SafetyEfficacyGuide_2018.pdf

Seung-oh, S., J. Park, S. Park, J. Cho, and S. Choi.”Evaluation of Direct and Indirect Safety Effects of Speed-Limit Reduction on Urban Networks”. *Journal of Transportation Engineering, Part A: Systems*, vol. 148, 2022.

Shin, K., Washington, S., van Schalkwyk, I. “Evaluation of the Scottsdale Loop 101 Automated Speed Enforcement Demonstration Program.” *Accident Analysis and Prevention*, vol. 41, no. 3, Oxford, N.Y., Pergamon Press, 2009, pp. 393-403.

Appendix A

BIG DATA SOURCES MEMO

Memorandum

Date: January 2024

To: Christopher Rider, LADOT

From: Emily Finkel and Sean Reseigh, Fehr & Peers

Subject: Big Data Sources for Vision Zero Analysis

LA22-3437

Big Data Overview

This document provides a summary of Big Data sources collected and used as part of the technical analysis. Big Data is defined by the U.S. Census Bureau as data that is fast-changing, large in both size and breadth of information, and comes from sources other than surveys.

The HIN, Prioritization, and systemic analysis incorporated connected vehicle data (CVD) and location-based service (LBS), to assess roadway volume, driver behavior, and multi-modal zone activity as they relate to collision data, and to the existing conditions and built environment of the City.

StreetLight Data

About

StreetLight Data applies proprietary machine-learning algorithms to measure travel patterns and makes them available on-demand via StreetLight InSight®, the world's first SaaS platform for mobility. StreetLight Data algorithmically transforms trillions of location data points into contextualized, aggregated, and normalized travel pattern data to deliver unique insights into how vehicles, bikes, pedestrians, and bus and rail passengers move on virtually every road and Census Block. StreetLight Data collects all of its transportation data as both Location Based Services (LBS) data which are services based on the location of a mobile device, and Connected Vehicle Data (CVD) which is derived from on-vehicle sensor and electronic control units (ECUs). Each data source can be used for analysis in the following data periods:

- LBS: January 1, 2016 – April 30, 2022
- CVD: January 1, 2022 and onwards

Use

Roadway weekday ADT (Average Daily Traffic) for all City-maintained roadways and citywide pedestrian and bicycle activity was pulled using the City's StreetLight Data Portal. Roadway ADT was pulled for only Collector and above roadways (omitted Alley, Private, Local Street – Limited/Standard, Other, Outside City, Unidentified). The non-local roadway network was planarized (how roadways are segmented) at intersecting non-local roads. Historical counts for segments on the 2018 High Injury Network were used to validate the results of the StreetLight Data ADT estimates. The analysis parameters used to collect roadway weekday ADT are as follows:

- Analysis Type: Segment Analysis
- Data Source: Connected Vehicle Data (CVD)
- Data Period: May 1, 2022 – April 30, 2023
- Day Type: Average Weekday (Monday – Friday)
- Day Part: All Day (12am – 12am)

Citywide pedestrian and bicycle activity data was pulled to identify active-mode activity centers across the City. This analysis only includes pedestrian and bicycle trips that start or end within the City. The analysis parameters are as follows:

- Analysis Type: Origin-Destination to Preset Geography
- Data Source: Location Based Service (LBS)
- Data Period: September 1, 2022 – April 30, 2022
- Day Type: All Days (Monday – Sunday)
- Day Part: All Day (12am – 12am)
- Preset Geography: 2020 Census Block Groups

Assumptions

Weekday ADT for non-collector (e.g., Avenues and Boulevards) roadways with an estimated weekday ADT less than 1,000 were manually adjusted by assigning the ADT of the maximum adjacent roadway with the same roadway name. This process was applied to account for inaccuracies in StreetLight Data's ADT estimates. All local roadways (non-collector and above) were classified into a low weekday ADT bin by default.

The Census Block Group that comprises LAX was omitted from the bicycle and pedestrian activity analysis. The Top 25th percentile Census Block Groups based on total pedestrian and bicycle trip count were classified as Pedestrian and Bicycle Activity Centers.

Note: Location Based Service (LBS) data sample sizes have decreased significantly over the past couple of years due to increase in App Tracking Transparency which gives users control over how their data is allowed to be aggregated and used by third parties for advertising or other purposes. While this affects the entire StreetLight Data sample size, it is a greater concern for their multi-

modal data and ability to differentiate for active modes. For future use of StreetLight Data, it is important to note this change in sample size for more granular analyses. To account for this decrease in sample size, StreetLight changed the data sources used for their estimation of travel patterns to Connected Vehicle Data (CVD).

Wejo Data

About

Wejo data is a big data vendor that derives its transportation-related solutions from autonomous, electric, and connected vehicle data, allowing users to assess driver behavior (excessive speeding, hard braking, harsh acceleration) at the roadway segment level. Wejo's data stream of roughly 18.4 trillion data points is derived from a 50 million+ vehicle supply base, with 13.7 million active vehicles.

Use

Wejo data was used to pair bi- and uni-directional observed speeds (mph), 85th percentile speeds (mph), and hard braking and acceleration events with collision data. Using speed and event data and pairing it with collision data and other sources, helped us to identify locations where driver behavior is most problematic. The analysis parameters are as follows:

- Speed data
  - Data Period: October 2022
  - Direction: Uni- and Bi-directional
- Event data
  - Data Period : October 2019
  - Direction : Bi-directional

Assumptions

Speed data was conflated to the City's centerline network. By default, speed data is aggregated uni-directionally. To capture bi-directional average observed and 85th percentile speeds, a weighted average based on the number of moving trips in each direction was used. For example, if the eastbound segment has 100 moving trips with an average speed of 40 mph and the westbound segment has 20 moving trips with an average speed of 20 mph, the average bi-directional speed will be weighted more heavily towards the eastbound leg. Segments with less than 10 moving trips were assigned bi-directional speeds based on the respective roadway class weighted average for the entire City.

High frequency hard braking and acceleration roadways were identified as the Top 90th percentile roadways based on the number of hard braking and hard acceleration events. This calculation is based on non-freeway roadway segments that have at least 10 hard braking or acceleration events.

Note: rapid, hard acceleration or hard-braking events are typically defined as exceeding +/- 2.67 m/s^2.

Ecopia

About

Ecopia uses intersection geometry vector data extracted from high resolution satellite and oblique imagery using artificial intelligence and machine learning to identify roadway configurations and attributes for use in GIS-based analysis.

Use

Ecopia was used to collect the following data:

- Number of vehicle travel lanes
- Lane Type (Turning Lanes, Through Lanes, Marked Bike Lanes)
- Lane width
- Crosswalks (Width & Color)
- Intersection geometry
- Raised and painted medians
- Painted Parking Lanes
- Curb-to-Curb Roadway Width

Appendix B

TECHNICAL DOCUMENTATION

FEHR & PEERS

Technical Analysis Documentation

Contents

Overview

This memo summarizes the technical workflow developed by Fehr & Peers for the 2024 High Injury Network and Intersections, Prioritization, Systemic Analysis, and Safety Data Dashboard procurement for the LADOT Vision Zero program. These workflows are intended to be used as a guide to replicate each analysis as new collision and contextual data becomes available. All workflows are designed to be used in ArcGIS Pro.

Throughout this memo, references to the following memos and, assumptions documents, and data dictionaries are made:

- High Injury Network and Prioritization Methodologies
- Big Data Sources
- Data Assumptions
- Collision Data Dictionary

High Injury Network (HIN)

Network

Base Network Development

The base network used for the HIN network is the City Centerline Feature Class which is hosted on the Los Angeles GeoHub. By default, the centerline for major roadways and roadways that have medians are divided roadways (one centerline for each direction of travel). For use in the HIN, the centerline network was converted into a single centerline for all roadways. This can be achieved with the following steps:

1. Create a new Double field in the centerline network.
2. Convert the Mobility Plan 2035 Street Designation to a unique integer in the newly created field (e.g., street_designation_integer). This conversion can be done using a python function in the Calculate Field interface. For example, Boulevard I will be converted to an integer of 1, Boulevard II to an integer of 2, etc.
3. The new Street Designation integer field will be used as the merge field in the Merge Divided Roads cartography tool. This tool merges adjacent line features that have a common ID or integer between them, within a user-specified search distance. Use the following parameters:
    a. Set the merge distance to 100 feet.

The resulting network will comprise of a single centerline for every roadway. Make sure to spot check various locations and street designations to ensure that all roads were merged correctly. In some cases a manual merge may be needed. To do this, delete the divided roads and draw a single centerline using the Editing Tools.

The final step in preparing the HIN base network is to dissolve the merged centerline into single corridors. This can be achieved with the following steps:

1. Corridors can be dissolved by either the roadway name or the street designation. It is recommended to dissolve based on the roadway name field. Before dissolving, ensure that roadway naming convention is consistent. For example, if prefixes and suffixes are used (e.g., N Western Ave), all roadway names for the respective roadway need to match. If they don't (e.g., N Western Ave and Western Av), they will not be dissolved.
2. Run the Dissolve tool with the following parameters:
    a. Input features – merged centerline network
    b. Dissolve Fields – cleaned street name field
    c. Create multipart features – unchecked

The resulting network represents a smoothed network where one feature/record exists for each roadway. This network is used as the base network in each step of the HIN methodology and severe as a primary contextual dataset in the systemic analysis.

Step 1 - Sliding Window

Once the dissolved base network has been created, the first step in developing the HIN is to apply the Sliding Window method, which is a well-known methodology recommended in the HSM for performing network screening along roadway corridor segments.

This method requires creating overlapping equidistant segments (windows) that shift a specified distance. Each window will be assigned an aggregated score based on the weight of collisions within its proximity. For reference, collision weights are defined in Table 1 of the High Injury Network and Prioritization Methodologies Memo. The parameters to create the sliding window network for the 2024 HINs are as follows:

- Input network – dissolved base network
- Window length – ¼ mile
- Window shift length – 1/10th mile

Once the sliding window network is created, calculating the HIN collision score for each window can be achieved with the following steps:

1. Create a Buffer around the sliding window network using the following parameters:
    a. Input Features – sliding window network
    b. Distance – 50 feet
    c. End Type – Flat

2. Run a Spatial Join to the sliding window buffer with the following parameters:
    a. Target Features – sliding window buffer
    b. Join Features – collisions containing HIN score
    c. Field Map:
        i. Create a new field in the field map that computes a SUM of the HIN collision score field from collisions feature class.

The resulting sliding window buffer includes the summed HIN collision score field that represents the aggregated score. For example, if a window contained 5 collisions each with a collision score of 2 within 50 feet of it, the aggregated score would be 10. Make sure to spot check various locations to ensure the scores are correct. The final step is to do a Field Join to carry aggregated HIN collision score field from the buffer back to the original sliding window network. This can be achieved using the Field Join tool with the following parameters:

- Input Table – sliding window network
- Input Field – unique sliding window ID
- Join Table – sliding window buffer containing aggregated HIN score field
- Join Field – unique sliding window ID
- Transfer Fields – aggregated HIN collision score field

The next step is to calculate the HIN contextual score for each window. This score is based on the weighted contextual factor score in Table 2 of the High Injury Network and Prioritization Methodologies Memo.

Table 1 below summarizes the search radii and conflation method used to conflate individual contextual factors to the sliding window network. Each contextual factor is flagged as a binary (0 or 1) field in the sliding window network. If the conflation method condition is met, a score for that respective contextual factor is given a value of 1. This process can be achieved with the following steps:

1. Add short integer field to sliding window network for respective contextual factor.
2. Use Select by Location with the following parameters:
    a. Input Features – sliding window network
    b. Relationship – Within a distance
    c. Selecting Features – contextual factor
    d. Search Distance – specified search radius
3. For the selected features, Calculate Field in newly created field in Step 1 and a assign value of 1.

Table 1: Contextual Factor Search Radii

Contextual Factor	Network Conflation Method	Intersection Conflation Method
Within Top Quintile LA Community Health and Equity Index census tract	Intersects with or within 100 feet	Intersects with or within 100 feet
Public or Private School	Within 1,000 feet	Within 1,000 feet
Pedestrian Activity Center	Intersects with or within 100 feet	Intersects with or within 100 feet
Bicycle Activity Center	Intersects with or within 100 feet	Intersects with or within 100 feet
High ADT	Overlaps with high ADT segment	At least one leg intersecting with buffer is a high ADT segment
High Roadway Classification	Overlaps with high roadway class segment	At least one leg intersecting with buffer is a high roadway class segment
Designated Truck Route	Overlaps with truck route	At least one leg intersecting with buffer is a truck route
High Observed Speed	Overlaps with high observed speed segment	At least one leg intersecting with buffer is a high observed speed segment
Presence of Transit Stop	Within 250 feet	Within 250 feet

Once you've conflated the contextual factors to the sliding window network, the HIN contextual score needs to be calculated in a new field. Use Excel or a python function in the calculate field interface to apply the contextual factor weights.

The final step is to create a composite HIN total score field that sums the HIN collision score and the HIN contextual score. This can be done using a simple SUM function in the calculate field interface.

The resulting sliding window network can be symbolized using the composite HIN total score field in GIS. See **Figure 1** as an example.

Figure 1. Symbolized sliding window network.

Step 2 – Network Smoothing

The resulting sliding window network from Step 1 is beneficial for the initial uncovering of locations that have a disproportionate number of fatal and severe injury collisions. However, the geometries of the windows overlap make it challenging to use for future analyses. This step smooths out the sliding window network into a smoothed network of dissolved corridors. This can be achieved with following steps:

1. Isolate "high scoring windows" in the sliding window network based on a percentile threshold or rank. This can be done in either Excel or using the ArcGIS API for Python (spatially enabled dataframes). Use the aggregated HIN total score field as the value to isolate high scoring windows. The 90th or 95th percentile is recommended.
2. Dissolve overlapping high scoring windows into single features. This will require creating a common ID between overlapping windows.
3. Connect the dissolved high scoring windows if they are within proximity to each other and if they are on the same corridor. For example, if two dissolved high scoring windows are within ¼ mile of each other on Western Avenue, they should be connected. This parameter is called "maximum gap length". A maximum gap length of ¼ or ½ mile is recommended.
4. Perform a final Dissolve on the resulting connected high scoring window network using the following parameters:
   a. Input features – connected high scoring window network
   b. Dissolve Fields – street name field
   c. Create multipart features – unchecked

The resulting network may still contain short corridors (e.g., less than ½ mile). These can be filtered out using a Definition Query that uses a SQL clause based on the Shape_Length field. Figure 2 is an example of the final smoothed network.

Figure 2. Smoothed network.

Intersections

Base Intersections Development

The following steps can be used to create the intersections dataset used for the HIN, Prioritization, and the Systemic Analysis. See **Figure 3** for the resulting intersections dataset.

1. Intersections are based on the merged centerline network created as part of the HIN. Dissolve the merged centerline network by street name and street designation using the following parameters:
    a. Input Features – merged centerline network
    b. Dissolve Fields – street name, street designation
    c. Create multipart features – unchecked
2. Intersect the resulting network using the following parameters:
    a. Input Features – dissolved merged centerline network (twice)
    b. Output Type – Point
3. Delete Identical using the following parameters:
    a. Input Dataset – resulting point dataset
    b. Field(s) – Shape

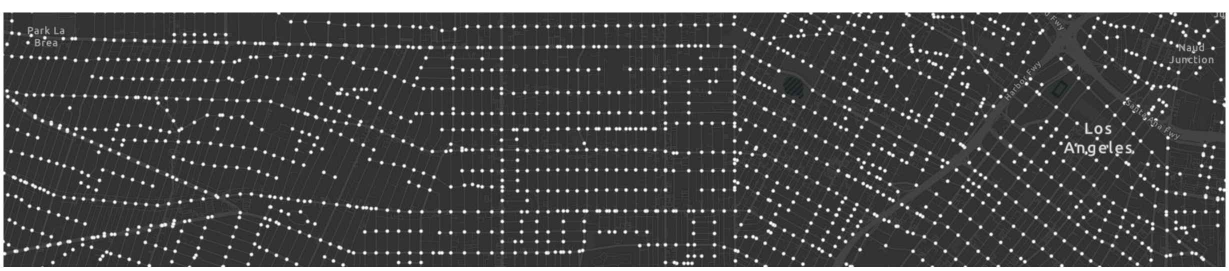


Figure 3. Intersections dataset

Calculate HIN Score

Using the intersections dataset from the steps above, you will need to create non-overlapping buffers in order to conflate the HIN collision and contextual scores for each intersection. The following steps can be used to create non-overlapping intersection buffers:

1. Create Thiessen Polygons with the following parameters:
    a. Input Features – Intersections dataset
    b. Output Fields – All fields
2. Create intersections Buffers with the following parameters:
    a. Input Features – Intersections dataset
    b. Distance – 250 feet
    c. Dissolve Type – Dissolve all output features into a single feature
3. Intersect the results of the first two steps with each other using the following parameters:
    a. Input Features – Thiessen Polygons results; Buffer result

These steps result in non-overlapping buffers for all intersections. See **Figure 4** as an example.

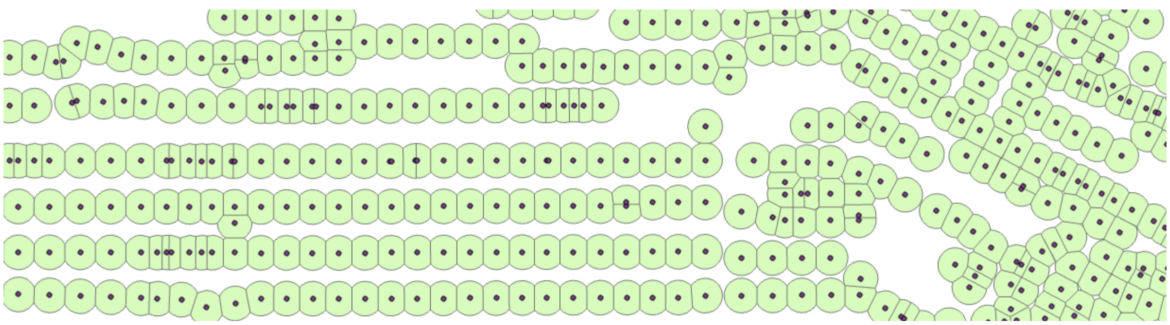


Figure 4. Non-overlapping intersection buffers.

The following step can be used to calculate the HIN collision score for each intersection:

1. Spatial Join the collisions to the non-overlapping intersections buffer using the following parameters:
    a. Target Features – non-overlapping intersections buffer
    b. Join Features – collisions
    c. Match Option – Intersect
    d. Field Map
        i. Create a new field in the field map that computes a SUM of the HIN collision score field from the collisions feature class

This will result in the aggregated HIN collision score for each intersection. To calculate the HIN contextual score, use the conflation method for each contextual factor in **Table 1** and the methods used to calculate the HIN contextual score for the network. The intersects will be based on the non-overlapping intersections buffer, not the intersection points.

The final step is to create a composite HIN total score field that sums the HIN collision score and the HIN contextual score. This can be done using a simple SUM function in the calculate field interface. Once complete, compute a Field Join that carries each contextual factor and HIN score fields from the non-overlapping buffers to the intersection points.

The resulting HIN intersections can be symbolized using the composite HIN total score field in GIS. Intersections that reside along a segment of the HIN are classified as HIN intersections. See **Figure 5** as an example.

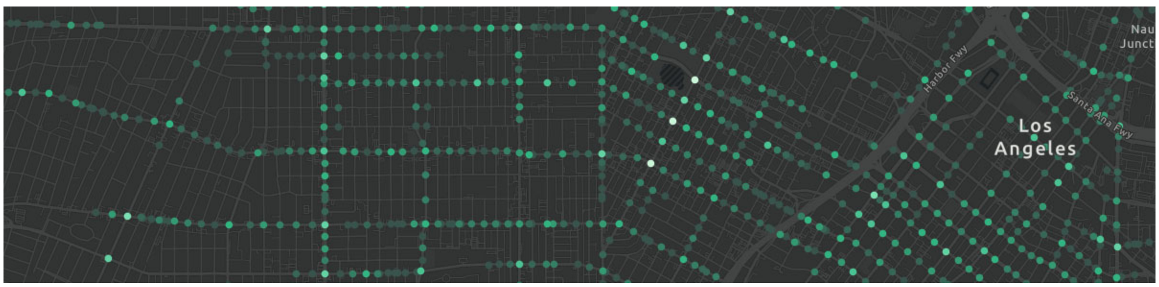


Figure 5. HIN intersections.

Prioritization

Network

Defining Corridors

HIN segments with a length of 2 miles or less do not need to be split into shorter corridors. Segments with a length of more than 2 miles will be split using the following approach:

1. For each 2+ mile corridor on the HIN, the top 90th percentile windows on each HIN corridor from the sliding window network are identified using the HIN total score. This can be done in either Excel or using the [ArcGIS API for Python]() (spatially enabled dataframes).
2. [Dissolve]() overlapping 90th percentile scoring windows into single features. This will require creating a common ID between overlapping windows.
3. Calculate the distance between 90th percentile scoring windows. If the distance is ½ mile or less, connect them. If the resulting connection is more than 1 mile in length, it will be defined as its own corridor.
4. For remaining 90th percentile scoring windows (more than ½ mile from the nearest 90th percentile scoring window or connected windows less than 1 mile), connect each

endpoint to the nearest mile marker. This can be achieved using the Generate Points Along Lines tool. You will need to apply this tool to portions of the HIN that are not a 90th percentile scoring window.

Associating the collision HIN score

The HIN collision score used in the network prioritization is based on the HIN collision score of windows contained within the corridors created in the Defining Corridors section. The following steps can be used to achieved this:

1. Create Buffers around the defined corridors network using the following parameters:
    a. Input Features – defined corridors network
    b. Distance – 5 feet
2. Use Spatial Join with the following parameters:
    a. Target Features – defined corridors network buffer
    b. Join Features – sliding window network containing the HIN collision score
    c. Field Map
        i. Create a new field in the field map that computes a SUM of the HIN collision score field from the sliding window network
    d. Match Option – Completely Contains
3. Compute a Field Join to join the summed HIN collision score field from the buffer back to the defined corridors networks.
4. Normalize the summed HIN collision score based on the scores in Table 3 of the High Injury Network and Prioritization Methodologies Memo.

Associating the contextual HIN score

The HIN contextual score used in the network prioritization is based on individual contextual factors present along windows contained within the Defining Corridors section. The following steps can be used to achieve this:

1. Use the buffers created in Step 1 of the Associating the collision HIN score subsection
2. Use Spatial Join with the following parameters:
    a. Target Features – defined corridors network buffer
    b. Join Features – sliding window network containing contextual factor fields
    c. Field Map
        i. Create a field for each contextual factor that returns the SUM of the respective contextual factor from the sliding window network
    d. Match Option – Completely Contains
3. Contextual factors present on at least one window contained within a corridor will be included in the contextual HIN score. For example, if a window on one of the corridor

within 250 feet of a transit stop, and a window on the other of the corridor is a high ADT window, both contextual factors will be applied to the corridor.

Figure 6 is an example result of the network prioritization process.

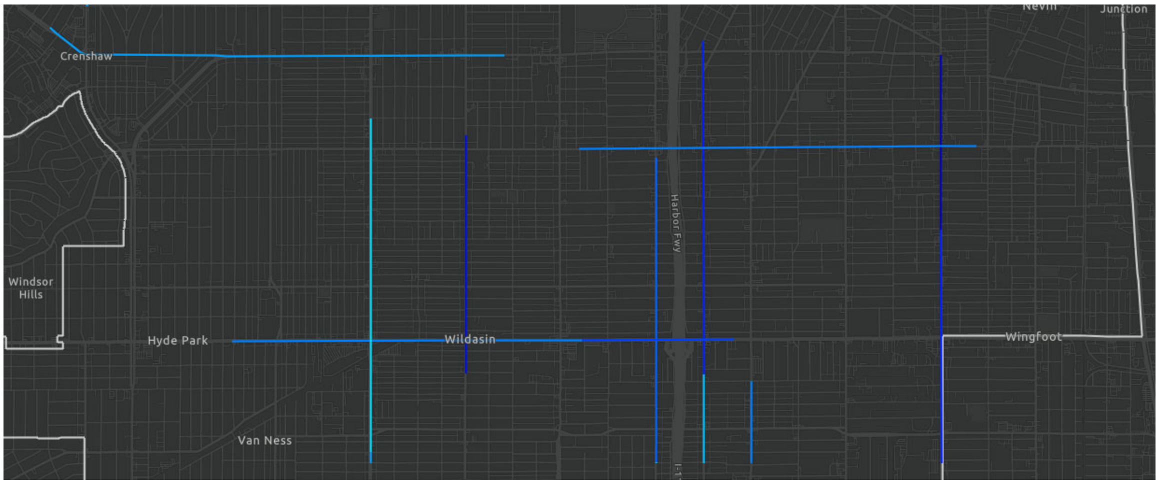


Figure 6. Priority corridors.

Intersections

Intersections can be prioritized using the same steps used to calculate the composite HIN total score in the HIN Intersections section. The same variables used in the HIN scoring methodology are used in the Prioritization methodology, with the addition of Mobility Plan Enhanced Networks as a contextual factor. These variables were also reweighted. For reference, the prioritization variables and scores are defined in Table 3 of the High Injury Network and Prioritization Methodologies Memo.

To include the Mobility Plan Enhanced Networks as a contextual factor, use the following steps:

1. Create Short integer field used to indicate if the intersection is on the respective Enhanced Network.
2. Use Select By Location using the following parameters:
    a. Input Features – non-overlapping intersections buffer
    b. Relationship – Intersect
    c. Selecting Features – Enhanced Network
3. Calculate Field in newly created field in Step 1 and assign value of 1
4. Repeat first three steps for each Enhanced Network

Figure 7 is an example result of the intersection prioritization.

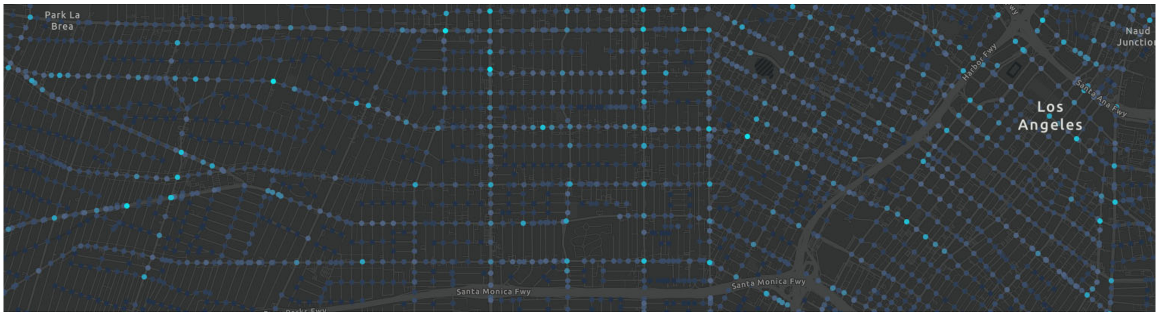


Figure 7. Priority intersections

Collision Data

Collision Records

The HIN, Prioritization, and Systemic Analysis used 5-year collision data from 2017-2021 from the City's RoadSafe GIS database. This dataset included only injury collisions (i.e. excluding Property Damage Only collisions, where an injury was not reported) and included collisions on surface street state facilities and at freeway ramp intersections. This dataset was compared against SWITRS, TIMS and LAPD data, with a limited number of additional collisions added where gaps could be identified.

Including additional collision years for analysis can be achieved using the following steps:

- Download the latest collision records from RoadSafe GIS as a csv.
- Ensure that the data schema matches the rows that list RoadSafeGIS as the Creator in the Collision Data Dictionary.
- Merge previous analysis years with the newly downloaded analysis years in Excel.
- Display XY data in GIS to geocode the collisions based on the Point_x and Point_y fields.

Party Records

Use the steps listed above to include additional analysis years for Party Records. Ensure that the newly downloaded party records data schema matches the rows that list RoadSafeGIS as the Creator in the Party Data Dictionary.

Victim Records

The HIN, Prioritization, and Systemic Analysis used the same 5-year data range for victims involved in injury collisions. Victims with no degree of injury were not included in any analysis.

Use the steps listed above to include additional analysis years for Victim Records. Ensure that the newly downloaded victim records data schema matches the rows that list RoadSafeGIS as the Creator in the Victim Data Dictionary.

Contextual Data

Big Data

Refer to the Big Data Sources memo for descriptions, uses, and assumptions for each Big Dataset used in the HIN, Prioritization, or Systemic Analysis.

Intersection Data

Refer to the Base Intersection Development subsection for guidance on how intersection data was created. For information on how attributes (intersection type and control) were conflated to the intersections dataset, refer to the Collision Data Dictionary and Data Assumptions workbooks.

Roadway Data

Refer to the Base Network Development subsection for guidance on how roadway data was created. Regarding the conflation of attributes from one network to another (i.e. overlap), it can be achieved using the following steps:

1. Create a small Buffer around the network in which attributes will be conflated to use the following parameters:
    a. Input Features – network
    b. Distance – 50 feet is recommended but make sure the buffer covers the network that contains the attributes to be carried through
    c. End Type – Flat
2. Calculate Geometry to calculate segment length in miles or feet (user preference) in a new Double field in both networks.
3. Intersect the buffered network from Step 1 with the network containing the attributes to be carried through. The output will contain a one-to-many relationship between the buffered network and conflated network. For each buffered network segment, keep only the intersected conflated network segment with the longest overlap using the calculated length field in Step 2.

The steps above can be used to conflate linear attributes between multiple network datasets.

Associating Contextual Data to Collisions

For information on specific search radii used to associate contextual data to collisions, refer to the *Search Distance* field in the Collision Data Dictionary.

Point Data

The intersections created in the Base Intersections Development subsection were used as a primary point contextual dataset. Intersections contain attributes associated to the intersections themselves (intersection type and control) and attributes associated with each leg of the intersection (weekday ADT, roadway classification). Attributes from roadways that intersect with an intersection buffer (refer to the steps in the Calculate HIN Score subsection of the Intersections High Injury Network section) can be conflated to the intersections using the following steps:

1. Spatial Join the respective roadway data to the intersections using the following parameters:
    a. Target Features – intersections buffer
    b. Join Features – roadway data
    c. Match Option – Intersect
    d. Field Map
        i. Create a new field in the field map that returns the MAX value attribute from all intersecting roadways (e.g., maximum ADT leg).
2. Spatial the result of Step 1 to the collisions using the following parameters:
    a. Target Features – collisions
    b. Join Features – intersections buffer with roadway attributes
    c. Match Option – Intersect
    d. Field Map
        i. Create a new field in the field map that returns the FIRST roadway attribute from the intersections dataset.

For non-intersection point contextual data (e.g., transit stops, school centroids), a simple Buffer using the respective Search Distance in the Collision Data Dictionary can be used. Once a buffer is created around the point contextual dataset, a simple Select by Location can be computed using the point contextual data buffer as the features to select collisions intersecting with it.

Line Data

For midblock collisions (not within the 250 feet or 75 feet intersection buffers created above), linear contextual data can be associated using the following steps:

1. Spatial Join the respective linear contextual dataset to the collisions using the following parameters:
    a. Target Features – collisions

   b. Join Features – linear contextual dataset
   c. Match Option – Closest
   d. Search Radius – 100 feet is recommended
2. The resulting spatial join will return the closest linear feature and all its attributes to the collisions. For collisions more than 100 feet from a roadway segment, the respective linear contextual factor should be left NULL.

Polygon Data

Polygon contextual data (e.g., land use, parks, census geographies) can be conflated using a Select by Location where the polygon contextual dataset is the selecting feature and the collisions are the selected features.

Associating Collisions to Roadways and Intersections

Associating collisions to roadways and intersections involves returning the number of collisions that occur at an intersection or roadway. The following steps can be applied to return the number of collisions by severity, mode, type, or any collision factor for intersections and roadways.

Intersections

Calculating the number of collisions at intersections can be achieved using the following steps:

1. Set a Definition Query (if needed) on your Collision dataset to isolate a subset of collisions by a collision factor (e.g., only fatal collisions).
2. Using the intersections buffer created with the steps in the Calculate HIN Score subsection of the Intersections High Injury Network section, compute a Spatial Join using the following parameters:
   a. Target Features – intersections buffer
   b. Join Features – collisions
   c. Match Option – Intersect

The result of the steps above will return a join_count field in the intersections that represents the number of collisions that intersected with each intersection buffer.

Roadways

Calculating the number of collisions on roadways can be achieved using the following steps:

1. Set a Definition Query (if needed) on your Collision dataset to isolate a subset of collisions by a collision factor (e.g., only fatal collisions).

2. Create a Buffer around the roadways using the following parameters:
   a. Input Features – roadway dataset
   b. Distance – 50 feet is recommended
   c. End Type – Flat
3. Spatial Join the collisions to the roadway buffer using the following parameters:
   a. Target Features – roadway buffer
   b. Join Features – collisions
   c. Match Option – Intersect

The result of the steps above will return a join_count field in the roadway dataset that represents the number of collisions that intersected with each roadway buffer.

Safety Data Dashboard

Data Schema

A comprehensive collision data schema was developed to optimize the development of the High Injury Network and Priority Corridors and Intersections and improve efficiencies in the systemic analysis. This data schema was also developed with web application and dashboard compatibility in mind. The data schema used in the Safety Data Dashboard matches the Collision Data Dictionary.

The collision data is hosted as a Feature Service on ArcGIS Server to enable compatibility with ArcGIS Dashboards. More information about web services can be found on the ArcGIS Server web services reference page. For future use, the collision data can be hosted as a Hosted Feature Layer on ArcGIS Online. More information about Hosted Feature Layers can be found on the Hosted Layers reference page.

Dashboard Elements

The Safety Data Dashboard was developed as an ArcGIS Dashboards solution. More information about ArcGIS Dashboards, elements, and configurations can be found on the ArcGIS Dashboards overview page.

The Dashboard compiles a variety of Dashboard Elements to enhance user experience and understanding of the collision landscape and systemic analysis. Each element references a specific category field in the collision data. See **Table 2** for reference.

Table 2: Safety Data Dashboard Elements

Chart Element	Element Type	Category Field	Split Field
Collision Severity Filter	Category Selector	Collision_severity	NA

Year Filter	Category Selector	Accident_year	NA
Month Filter	Category Selector	Month_	NA
Time Filter	Category Selector	Sys_time_CAT	NA
Bike-Involved Filter	Category Selector	ColBic_Cnt	NA
Pedestrian-Involved Filter	Category Selector	ColPed_Cnt	NA
Motorcycle-Involved Filter	Category Selector	Motorcycle_involved_CAT	NA
Active Mode Involved Filter	Category Selector	Pedbike_CAT	NA
Community Health and Equity Index Filter	Category Selector	Sys_equity_indicator	NA
Near a School Filter	Category Selector	Sys_school	NA
2024 All Modes HIN Filter	Category Selector	Sys_on_HIN_CAT	NA
2035 Mobility Plan Filter	Category Selector	Sys_on_enhanced_net_CAT	NA
Council District Filter	Category Selector	Sys_council_district	NA
Total Collisions Statistic	Indicator	Count - OBJECTID	NA
Fatal Collisions Statistic	Indicator	Sum – kill_col_cnt	NA
Severe Injury Collisions Statistic	Indicator	Sum – Sevinj_col_cnt	NA
Bike-Involved Collisions Statistic	Indicator	Sum – ColBic_cnt	NA
Pedestrian-Involved Collisions Statistic	Indicator	Sum – ColPed_cnt	NA
Motorcycle-Involved Collisions Statistic	Indicator	Sum – motorcycle_involved_CAT	NA
Alcohol-Involved Collisions Statistic	Indicator	Sum – sys_dui_CAT	NA
Hit and Run Collisions Statistic	Indicator	Count – OBJECTID (filter hit_and_run IN ('F', 'M'))	NA
Unsafe Speed PCF Collisions Statistic	Indicator	Count – OBJECTID (filter pcf_viol_category IN (3))	NA
Year and Month Chart	Serial Chart	Month_	Accident_year
Time and Day Chart	Serial Chart	Day_of_week	Sys_time_CAT
Year Chart	Serial Chart	Accident_year	NA
Collision Severity Chart	Serial Chart	Collision_severity	Ksi_CAT
Collision Type Chart	Serial Chart	Type_of_collision	Ksi_CAT
Primary Collision Factor Chart	Serial Chart	Pcf_viol_category	Ksi_CAT
Location Chart	Serial Chart	Sys_int_control	Ksi_CAT
Roadway Classification Chart	Serial Chart	Sys_arterial_CAT	Ksi_CAT

Collision Map	Map	NA	NA

Updating Data

To add new collision data as it becomes available, appended collisions must have a data schema that matches the data schema in the Collision Data Dictionary. To append new collision data to the original collision data used in the Safety Data Dashboard, follow these steps:

1. Use Display XY data to geocode new collision data.
2. Ensure that field names and data types match the original data schema.
3. Merge the collision data to the original collision data using the following parameters:
    a. Input Datasets – original collision data; new collision data

Once you've finalized the merge operation, the final steps to update the Safety Data Dashboard include:

1. Publish a new Feature Layer to ArcGIS Online using the newly merged collision data.
2. Make a copy of the original Safety Data Dashboard and the Webmap hosted within it using ArcGIS Assistant. This step is critical to ensure that the original dashboard is not altered by the new Feature Layer. ArcGIS Online solutions can break and become unfixable of the original data source is replaced with a new data source that does not match the original data source schema.
3. Remap the back-end collision data in the newly copied Webmap with the new collision Feature Layer REST Endpoint using ArcGIS Assistant.
4. Open the newly created copied Webmap to ensure that collision data was updated and is drawing correctly.
5. Remap the newly copied Webmap to be hosted within the Dashboard. This can be done using the item ID of the Webmap and can be replaced in the JSON using ArcGIS Assistant.
6. Open the new Dashboard to ensure that it reflects the components of the updated collision data.

Appendix C

COLLISION LANDSCAPE SUMMARY

City of Los Angeles Department of Transportation (LADOT) Vision Zero

Collision Landscape Summary

Throughout the document there are references to the "2017 Safety Study." The 2017 Safety Study was based on data from 2009 to 2013. Direct comparisons to the 2017 Safety Study were only made in cases where we had relative certainty in comparing apples-to-apples, based on the methodology. Comparisons that involve uncertainty about methodology are noted.

Primary Collisions Factor (PCF) Violation Category Code are not always intuitive. Select violation types are described below. Please note that how a collision is reported is the result of the discretion of the reporting officer and their training.

- Vehicle Right-of-Way Violation: covers a party (of any mode) not yielding to the driver's right-of-way or the driver observing his or her right-of-way improperly. A common citation under this category is for drivers who do not yield to oncoming traffic during a left turn or U-turn. Other citations include not yielding properly at a stop sign, and not yielding when entering a road from a property. While the title specifies vehicle, a vehicle hitting a person on a bicycle and not yielding to pedestrians for right turns on red can also be cited.
- Pedestrian Right-of-Way Violation: covers drivers violating a pedestrian's right-of-way. A common citation is for drivers not yielding at a crosswalk. It also includes drivers not yielding to a pedestrian on a sidewalk, such as at a driveway.
- Pedestrian Violation: covers pedestrians not following a rule of the road. In 2022, the Freedom to Walk Act (AB-2147) was passed, which allows people to jaywalk or cross outside of an intersection without being ticketed, provided there is no immediate danger. Prior to AB-2147, a pedestrian violation would be cited if a pedestrian was crossing unsafely outside of a crosswalk and not yielding to vehicles. Pedestrian Violations also include pedestrians crossing improperly during the flashing "Don't Walk" or red phase of a signal, pedestrians suddenly leaving the curb, and pedestrians walking in the roadway on the right-hand side of the road.
- Improper Turning: covers turns at intersections and turning off of a road, plus proper signaling during lane changes. A common citation under this category is for drivers who move left or right on a roadway when it is not safe or without signaling. It also covers drivers making an illegal U-turn, turning from a lane that does not allow turns, or making a turn that is signed as prohibited.
- Traffic Signals and Signs: covers drivers not observing the rules of a particular signal or sign. Common citations under the category involve a vehicle not stopping at the limit line or stop bar at a signal or stop sign, respectively, or the crosswalk if neither is present. This includes running red lights. If a vehicle stops but then does not yield properly to another vehicle in the intersection, it is included under the Vehicle Right of Way Violation category.

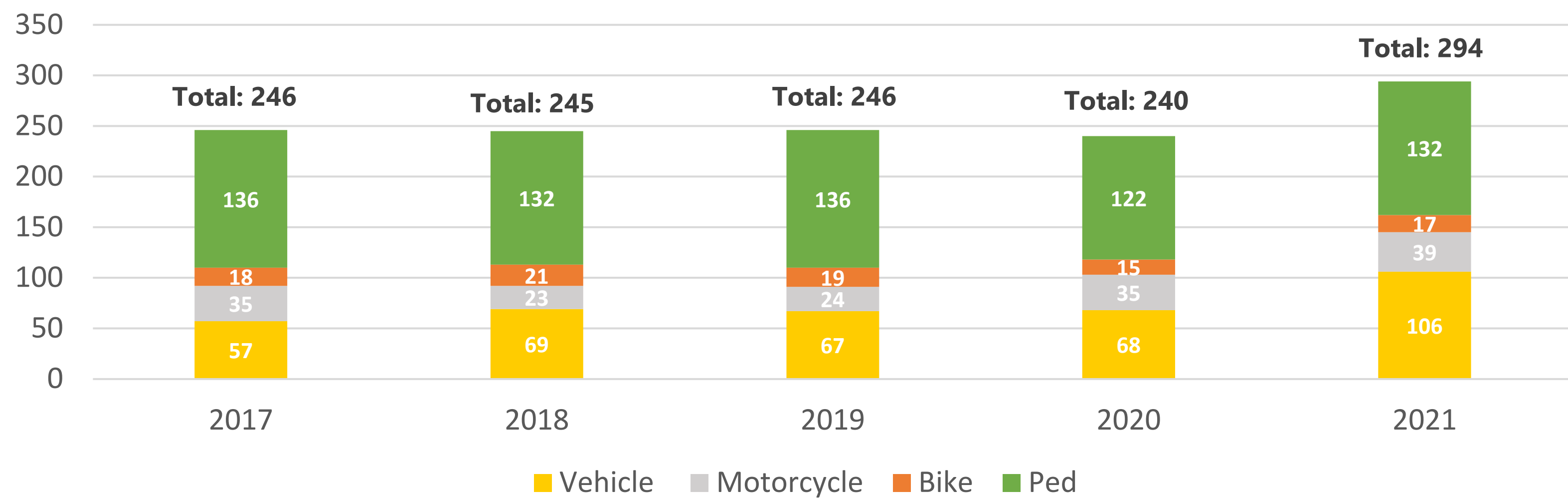
- Unsafe Speed: covers people driving "at a speed greater than is reasonable or prudent having due regard for weather, visibility, the traffic on, and the surface and width of" the roadway, and driving at a speed that endangers others. It does not necessarily imply that someone has driven above the speed limit. Even in collisions where "Unsafe Speed" is not the primary violation type, speed is often a factor in severe and fatal collisions.

Annual Collision Trends: 2017-2021

LAPD Fatal Collisions

- Between 2017 and 2021 annual traffic fatalities reported by the Los Angeles Police Department (LAPD) increased by approximately 20%, from 246 to 294.
- The LAPD reported traffic fatalities is the only data in this summary that is sourced directly from the LAPD. The remainder of the analysis is based on collision data provided by LADOT, via their RoadsafeGIS database. Due to data cleaning and geocoding, a subset of collisions from the original database was used for this analysis, accounting for 99% of KSI collisions in the City's database.

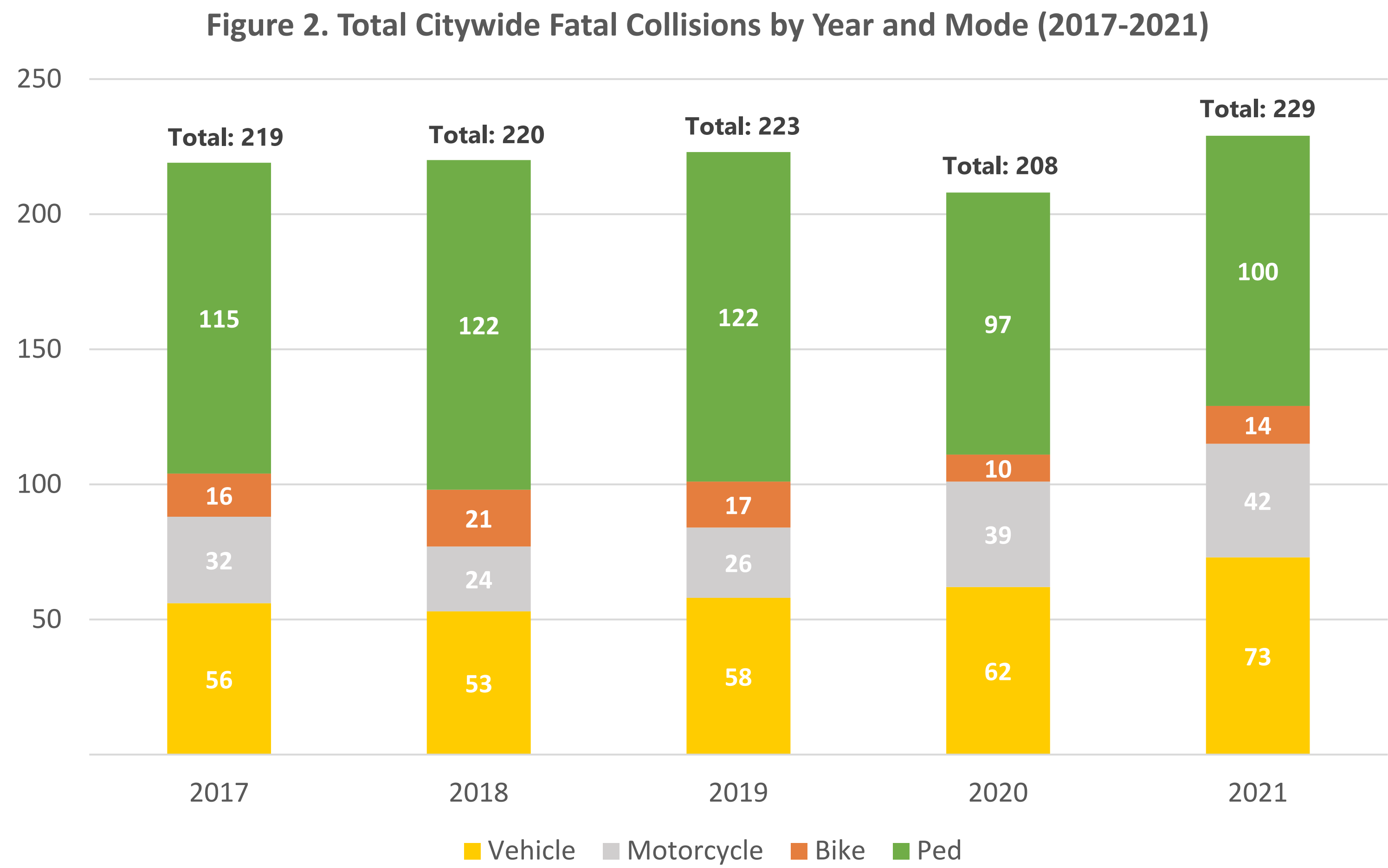
Figure 1. LAPD Reported Traffic Fatalities by Year and Mode (2017-2021)



Note: Figure 1 uses LAPD fatality data. The remainder of the figures in this document use collision data provided by LADOT from the RoadSafeGIS database, unless otherwise stated.

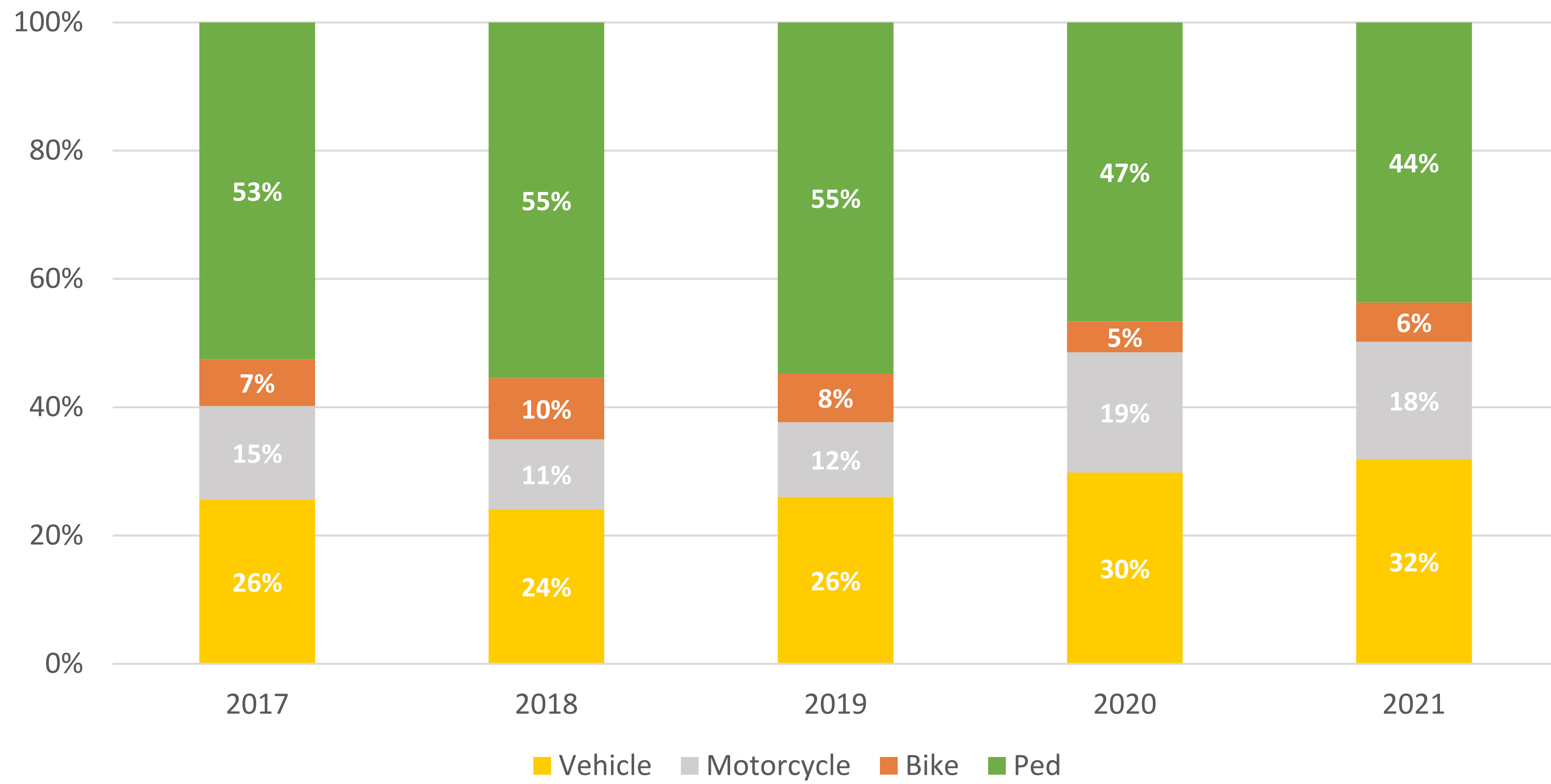
Fatal Collisions

- Between 2017 and 2021, there were 1,099 fatal collisions, an average of 220 fatal collisions per year.



- Collisions involving pedestrians account for the largest share of fatal collisions – a trend that remains the same between 2017 and 2021.
- Between 2017 and 2021, the share of fatal collisions involving bicyclists and pedestrians decreased, while the share of fatalities involving motorcycles and vehicles increased.

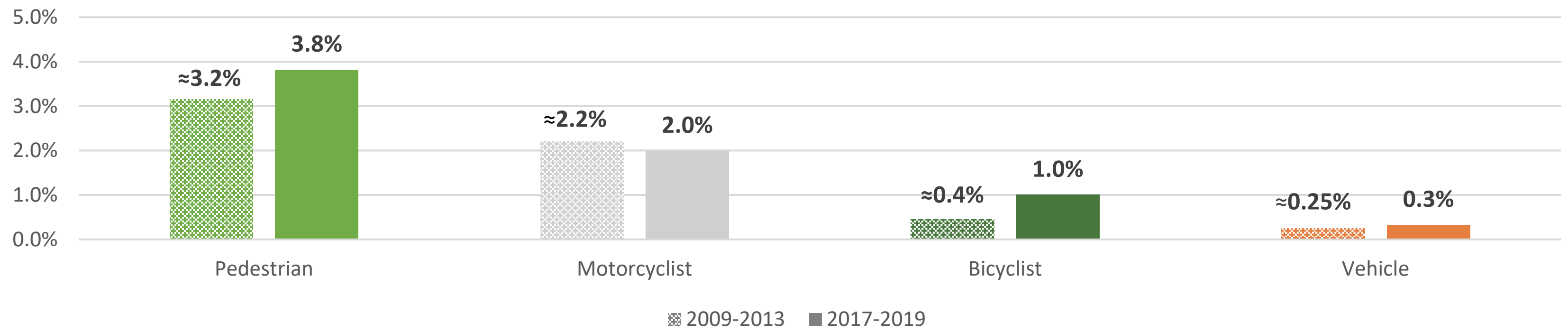
Figure 3. Citywide Fatal Collisions Percentages by Year and Mode (2017-2021)



Injury Collisions that Result in a Fatality

- Between 2017 and 2019, 3.8% of all pedestrian injury collisions result in a fatality – the share of injury collisions resulting in a fatality for pedestrians is more than 10x that for vehicle-only collisions.
- The share of pedestrian and bicycle collisions resulting in a fatality is slightly higher in 2017-2019, when compared with the 2017 Safety Study.

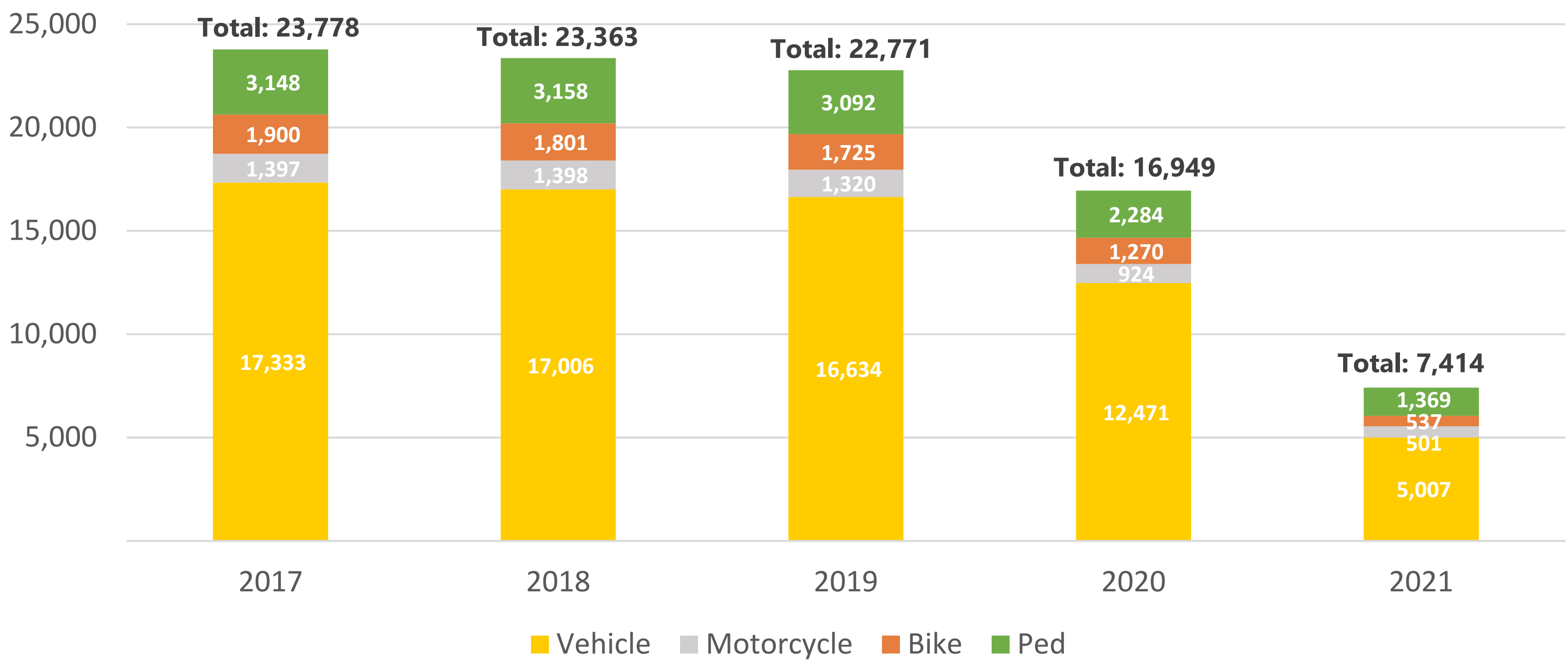
Figure 4. Share of All Collisions that Result in a Fatality (2009-2013 v 2017-2019)



Note: 2020 and 2021 were ommitted from this comparison to control for trends related to COVID-19 and LAPD collision reporting practice changes.

- Between 2017 and 2021, there were 94,275 collisions, an average of 18,855 collisions per year.
- Collisions saw a slight annual decrease between 2017 and 2019. Between 2019 to 2020, collisions decreased 26%, and from 2020 to 2021 – 56%. Overall collisions decreased from 2017 to 2021 by 69%, with 2020 and 2021 experiencing changes related to pandemic-era travel patterns and changes in LAPD collision reporting practices.*

Figure 5. Citywide All Collisions by Year and Mode (2017-2021)

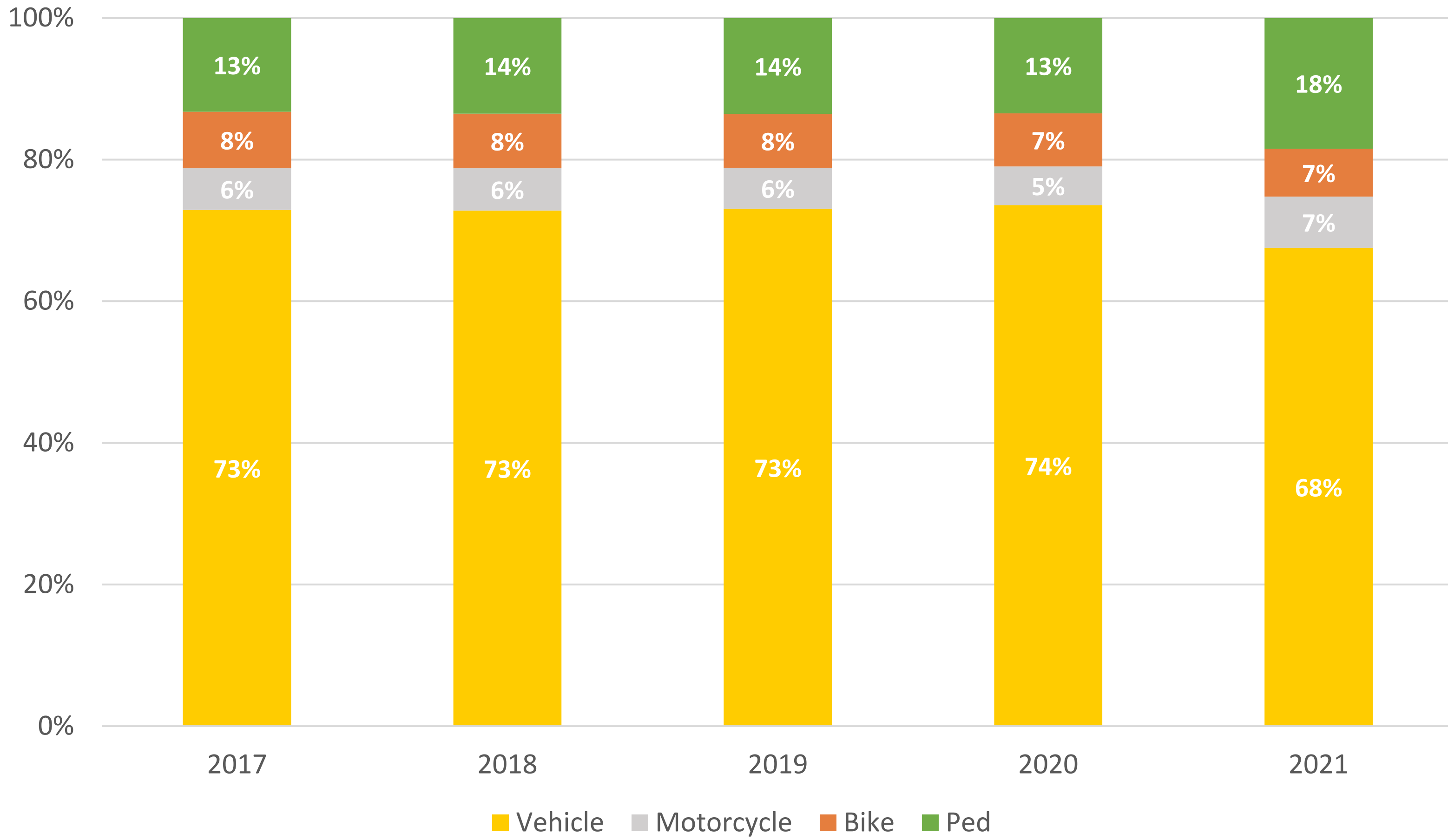


*Note: Overall collisions decreases in 2021 were primarily driven by the change in LAPD collision reporting practices. Beginning on January 1, 2021, LAPD collision reporting methodology requires parties to self-report lower-severity collisions through the City's online police report portal. Prior to this methodology change, traffic officers were required to file these reports. Since this change, it has been observed that involved parties are less likely to self-report these collisions than when officers were required to report them, resulting in fewer recorded collisions.

Collisions involving multiple modes are assigned to the "highest vulnerability" mode (e.g. pedestrian-bicycle collisions are assigned as pedestrian) so that collisions are not double-counted throughout the Annual Collision Trends section.

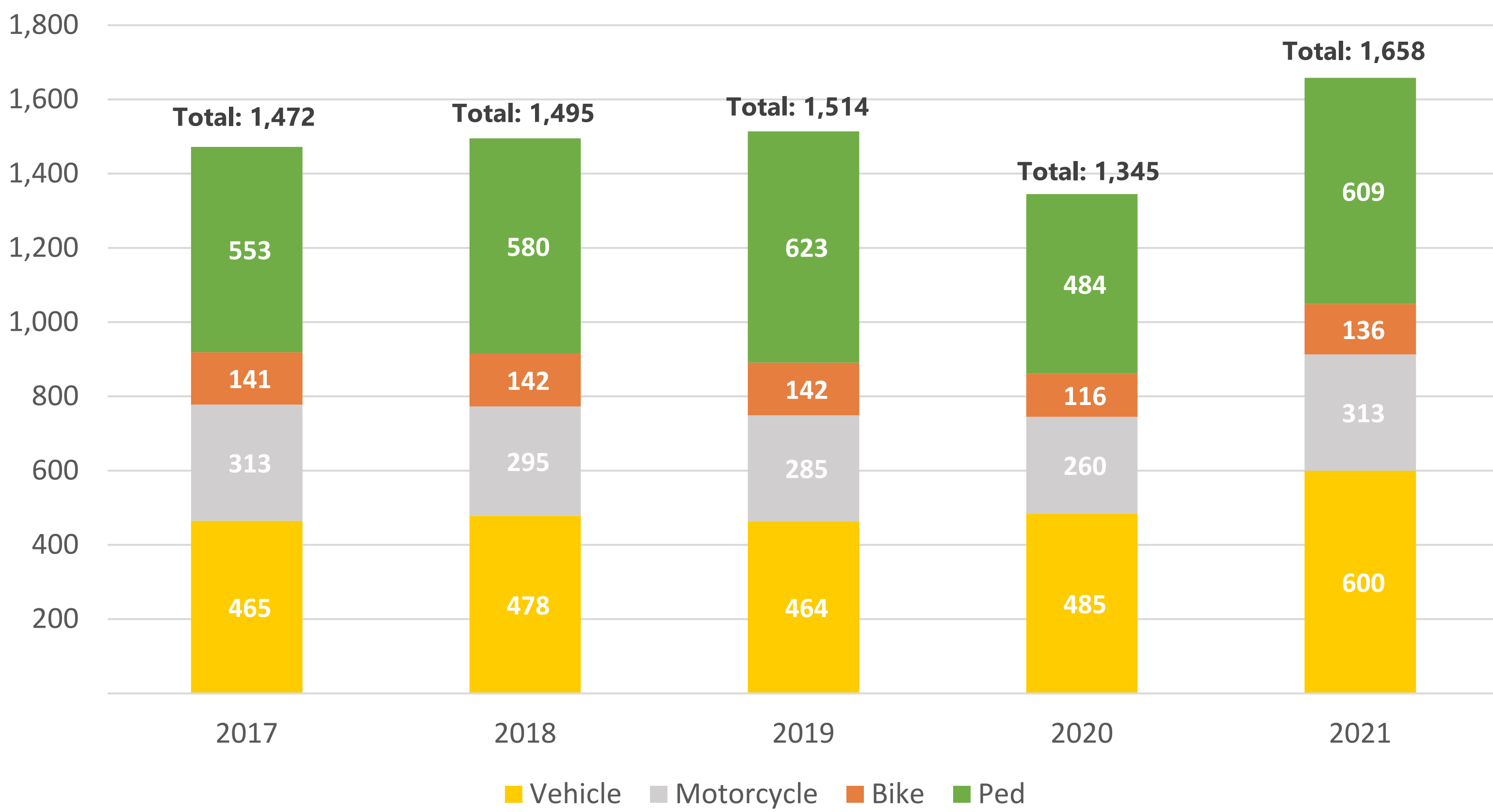
- In 2017, pedestrian collisions represented approximately 13% of all collisions. By 2021, pedestrian collisions represented 18% of all collisions, while bicycle-involved and vehicle-only collision shares decreased.

Figure 6. Citywide All Collisions Percentages by Year and Mode (2017-2021)

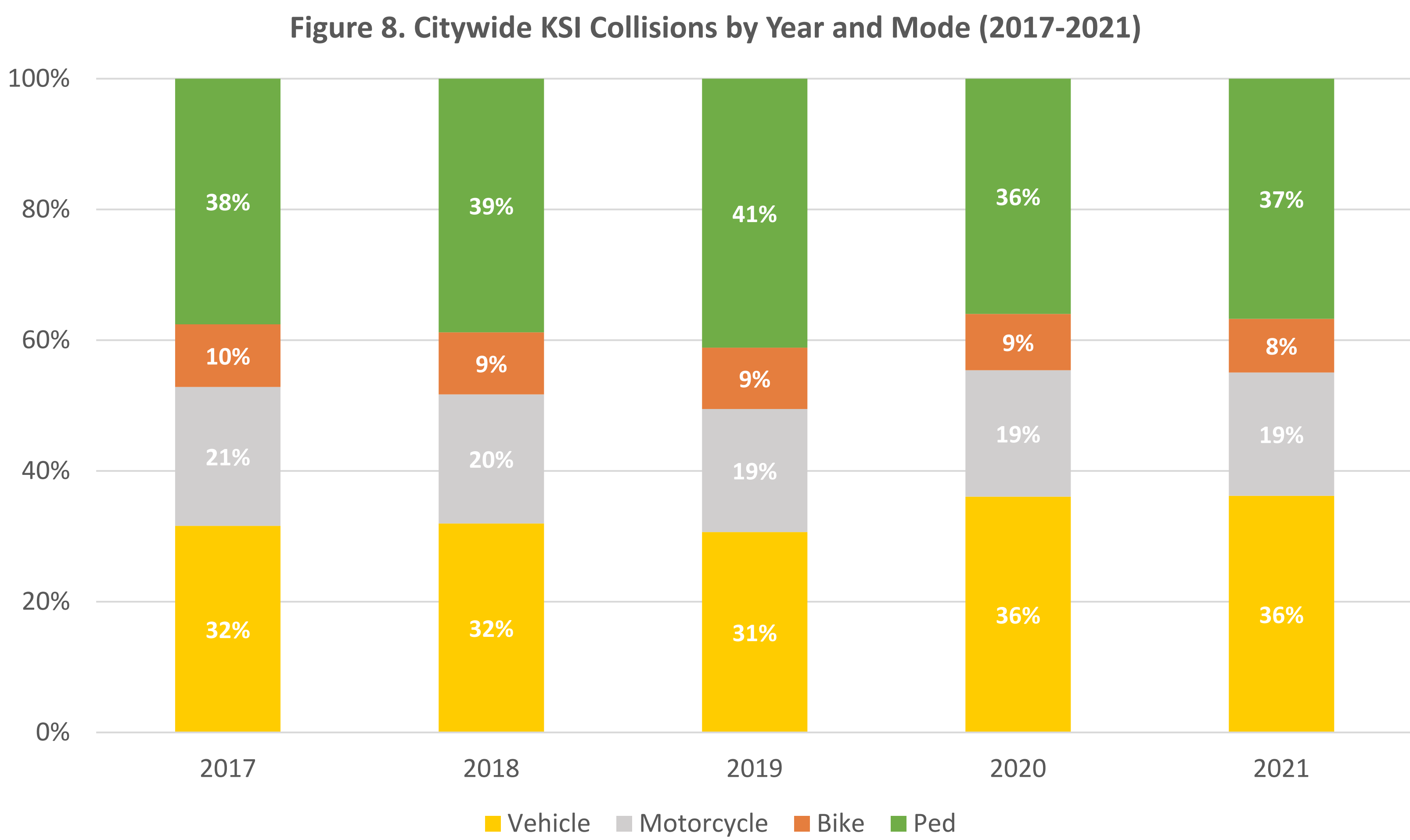


- Between 2017 and 2021, there were 7,484 KSI collisions, an average of 1,497 KSI collisions per year.
- KSI collisions decreased 11% during the first year of the pandemic, but increased 23% the following year.
- KSI collisions increased by approximately 13% from 2017 to 2021.

Figure 7. Citywide KSI Collisions by Year and Mode (2017-2021)

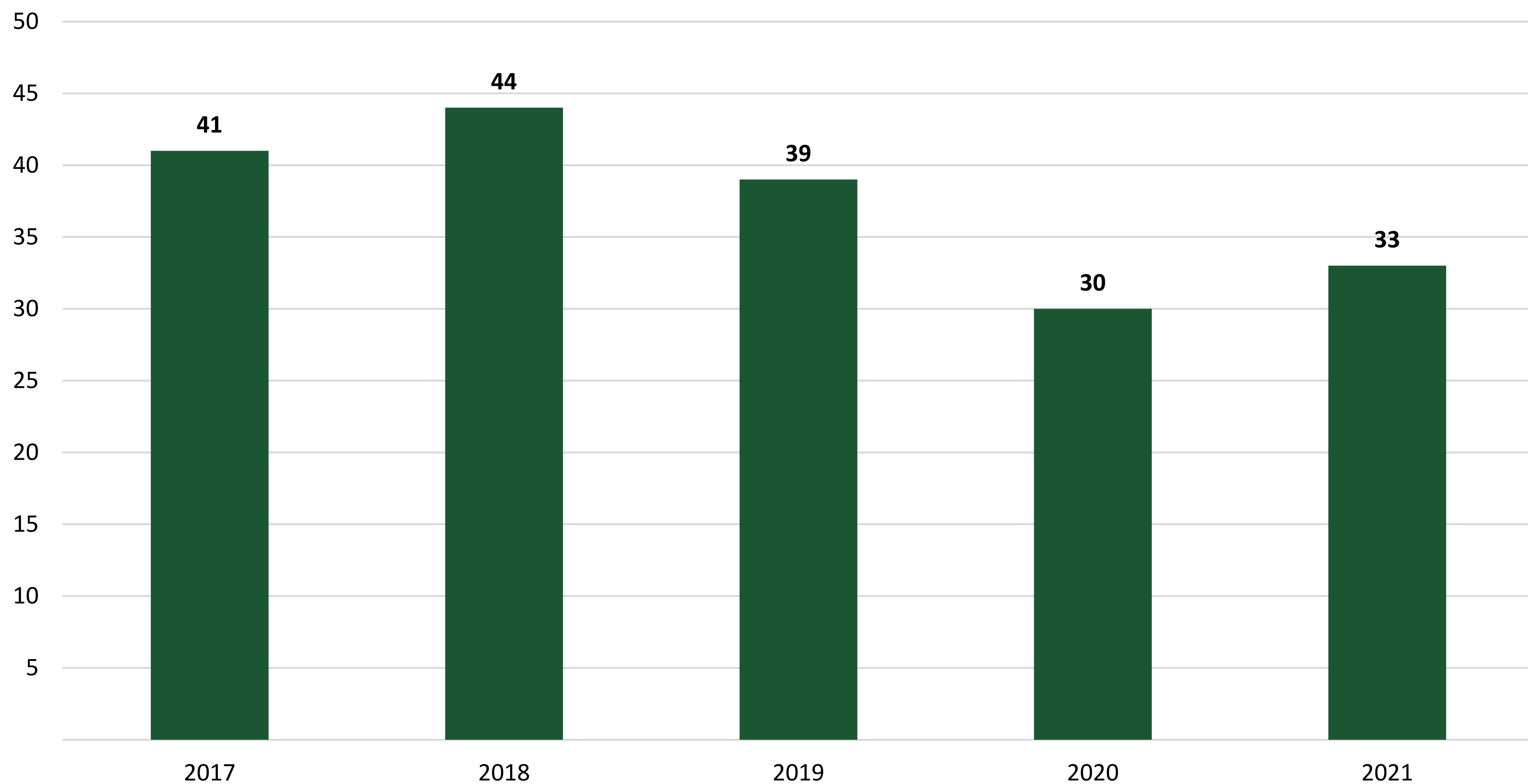


- Between 2017 and 2021, the share of vehicle-only KSI collisions – relative to other modes – increased by 4 percentage points from 32% to 36%, while the other modes saw a slight decrease.



- KSI collisions coded as truck-involved – trucks with more than 2 axles (i.e., bigger than a pickup or panel truck, including semis, tank trucks, and tow trucks) account for a small share of KSI collisions reported citywide – approximately 2.5%. In LA County, for the same time period on local roads, truck-involved collisions accounted for 3.1%. These collisions decreased by approximately 20% from 2017 to 2021 (41 to 33 annual KSI collisions).

Figure 9. Citywide Truck-involved KSI Collisions (2017-2021)



- Of all collisions, vehicle-only comprised 73%, pedestrians – 14%, bicycles – 8%, and motorcycles – 6%.
- The 2017 Safety Study found that 83% of collisions involved vehicles only, 8% involved pedestrians, 6% involved bicyclists and 3% involved motorcycles. Some of this change may be accounted for in the 2017 Study looking at all collisions (not just injury collisions) and/or the change in LAPD collision reporting practices.
- Between 2017 and 2021, pedestrian collisions accounted for 51% of fatal collisions and 38% of KSI collisions while making up 14% of all collisions. The 2017 Safety Study found that pedestrian collisions made up nearly half of all fatal collisions.
- The 2017 Safety Study found that motorcycles accounted for 15% of all traffic deaths, the same share found here when examining fatal collisions between 2017 and 2021. Between the 2017 and 2021 period, motorcycle collisions also accounted for a larger proportion of KSI and fatal collisions relative to all collisions.
- These data indicate that pedestrian and motorcycle-involved collisions are more likely to lead to severe injuries or fatalities relative to vehicle-only or bicycle-involved collisions.

Figure 10. Citywide Percent of All Collisions (2017-2021)

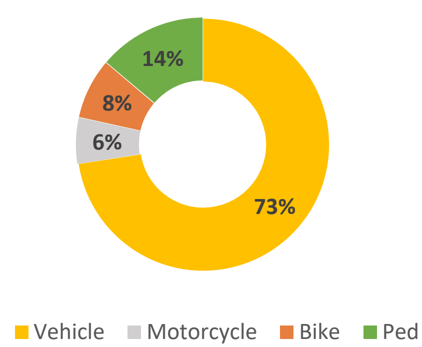


Figure 11. Citywide Percent of KSI Collisions (2017-2021)

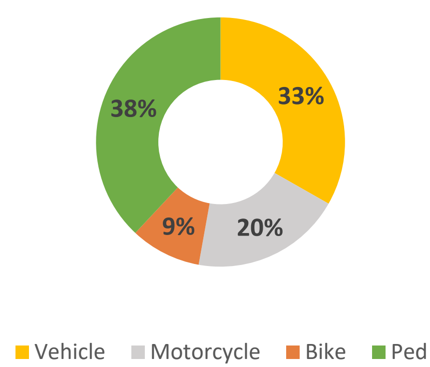
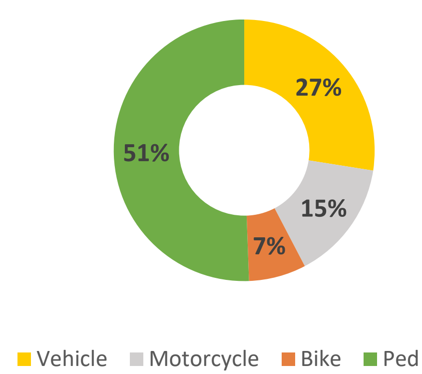


Figure 12. Citywide Percent of Fatal Collisions (2017-2021)



Key Demographic Trends: 2017-2021

Age

- Collisions involving vulnerable road user age groups, both younger people under the age of 15 and seniors age 65, were examined and compared to Census data to understand potential disproportionality in collision representation. People age 65+ were found to be slightly overrepresented in as parties and injured victims in pedestrian collisions, but no other disproportionality was found.

Figure 13. All Collisions Citywide by Age Group (2017-2021)

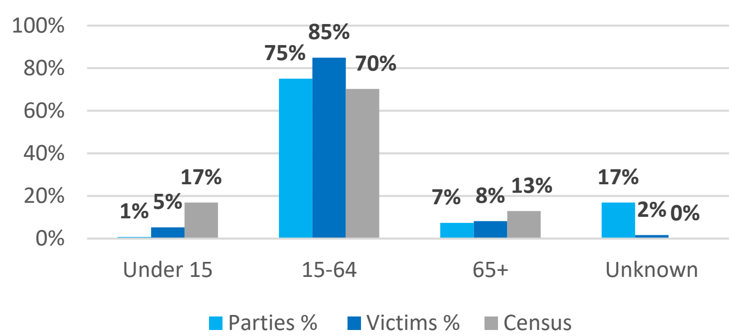


Figure 14. Bicycle Collisions Citywide by Age Group (2017-2021)

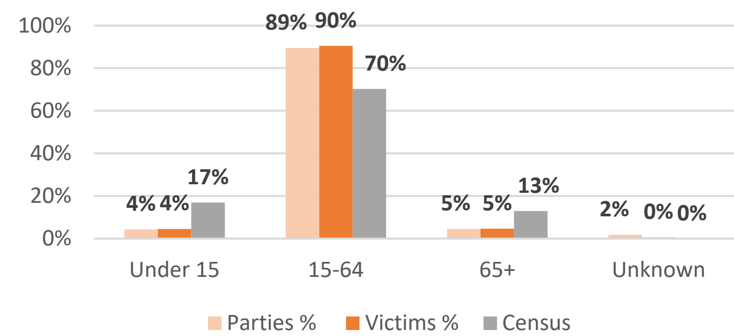


Figure 15. Pedestrian Collisions Citywide by Age Group (2017-2021)

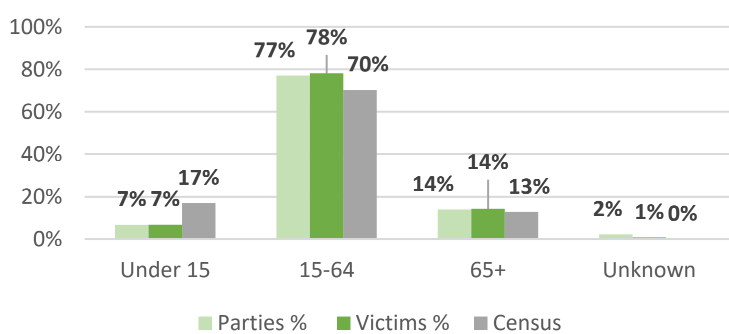
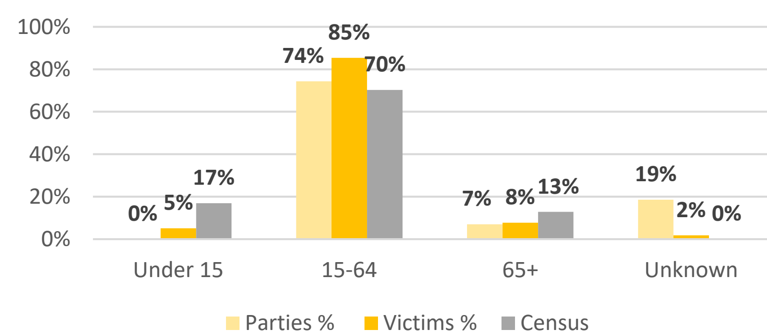
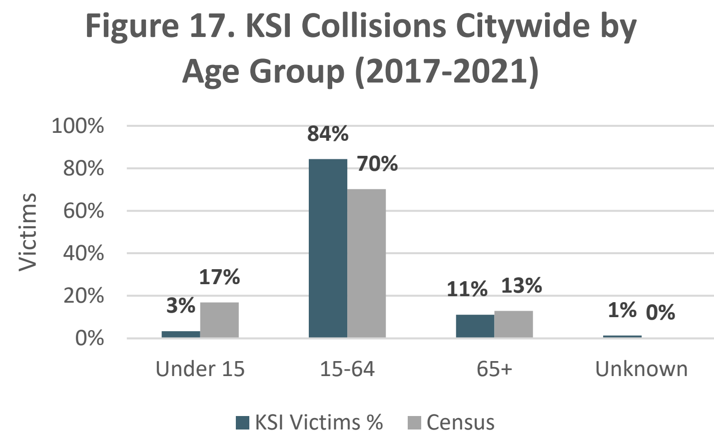


Figure 16. Drivers/Passengers Collisions Citywide by Age Group (2017-2021)





Note: Census data is derived from the 2021 American Community Survey (ACS) 5-year Estimates

- When examining only fatal pedestrian collisions, a different trend emerges. Older adults (age 65+) account for 27% of fatal pedestrian victims – more than double their share of the Census population. In the 2017 Safety Study found a similar trend, with older adults accounting for 11% of the population and 26% of pedestrian fatalities.
- Within the younger and older age groups, we also see pedestrians accounting for an outsized share of fatal collision victims. 73% of people age 65+ killed in collisions and 56% of people under age 15 killed in collisions were pedestrians.

Figure 18. Fatal Pedestrian Victims by Age

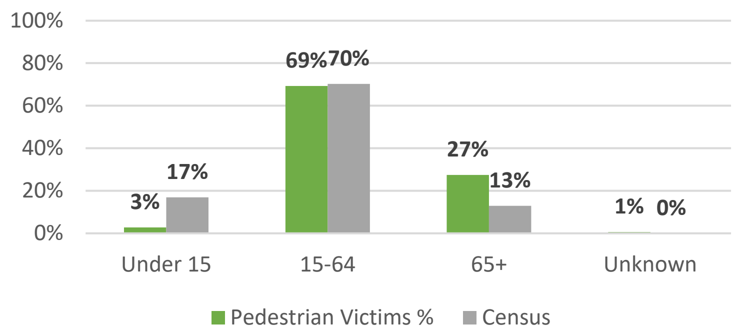


Figure 19. Fatal Bicyclist Victims by Age

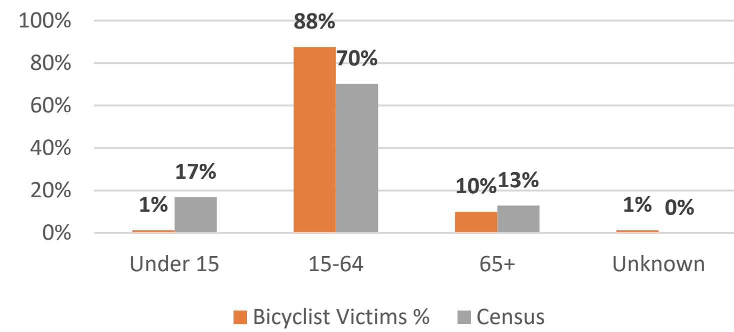
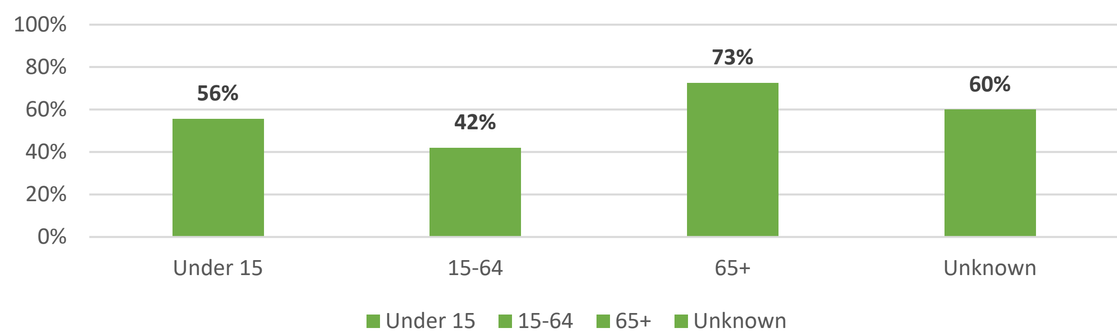


Figure 20. Fatal Pedestrian Victims by Age Relative to Total Fatalities by Age



Gender

- Men accounted for a larger share of both parties and injured victims in bicycle, pedestrian and KSI collisions relative to their population proportion.

Figure 21. Bicycle Collisions Citywide by Gender (2017-2021)

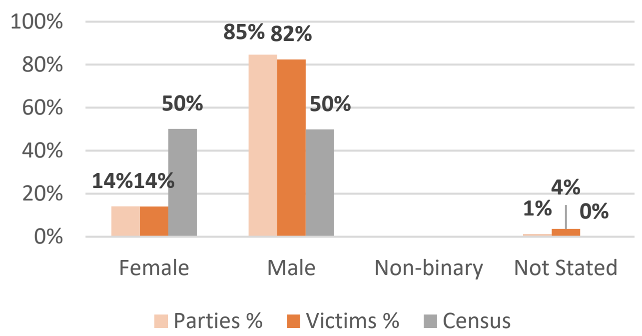


Figure 22. Pedestrian Collisions Citywide by Gender (2017-2021)

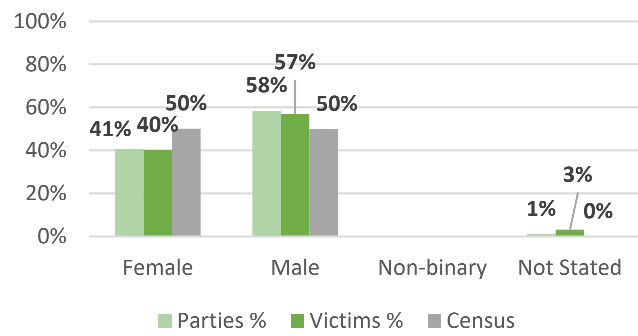
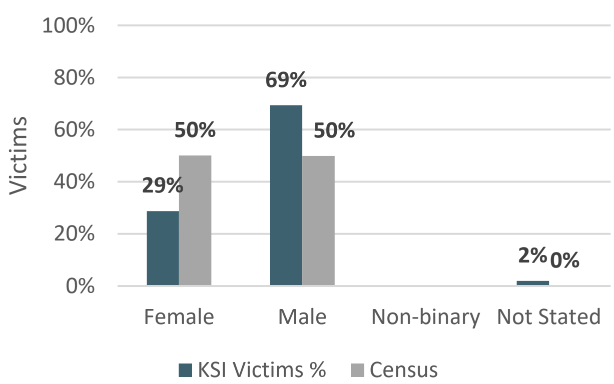


Figure 23. KSI Collisions Citywide by Gender (2017-2021)



Age & Gender

- Ages 15-64 are overrepresented as pedestrian KSI collision victims, compared to City of Los Angeles Census data. This trend is especially true for men. Women age 65+ are also overrepresented as pedestrian KSI collision victims, compared with Census data.
- Men in all age groups represented a higher number of victims in pedestrian KSI collisions than females, relative to their respective populations in each age group.
- Figure 25 shows that there is a large difference between the rate of male and female pedestrian KSI victims per 100,000 population. The difference shown here between men and woman is similar to that of the 2017 Safety Study, though the rates for the 2017-2021 data are higher for people ages 15-64 and 65+. This may be due to a difference in methodology.

Figure 24. Pedestrian KSI Collisions Victims Percentages by Age and Gender (2017-2021)

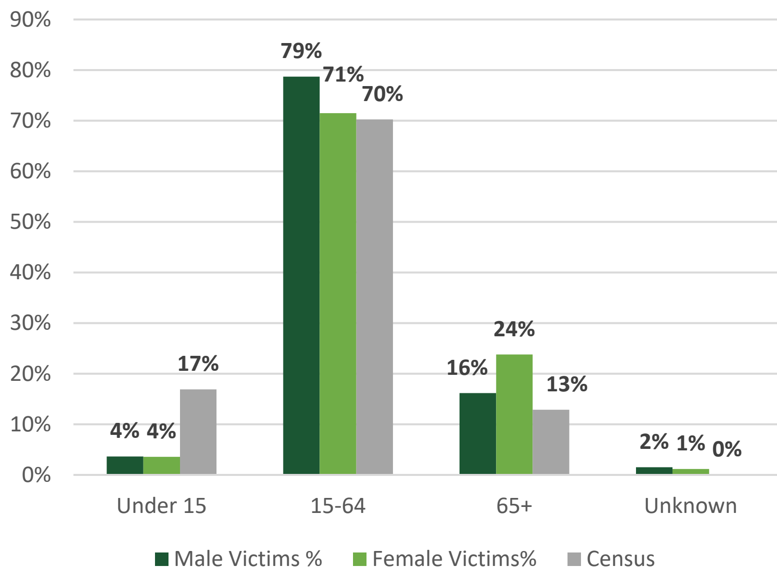
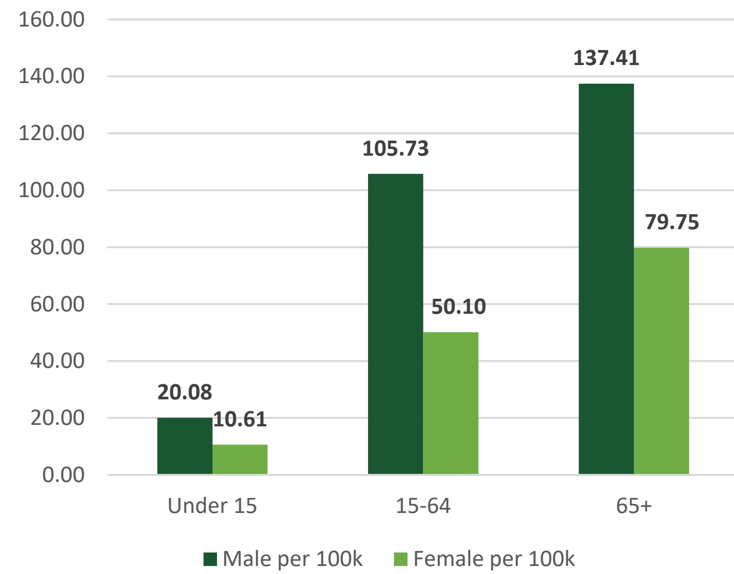


Figure 25. Pedestrian KSI Collisions Victims by Age and Gender per 100k Population (2017-2021)



Race/Ethnicity

- Black pedestrians and bicyclists are overrepresented parties in collisions, compared with City of Los Angeles census data. Hispanic bicyclists are also slightly overrepresented in collisions.

Figure 26. All Bicyclist Parties Involved in Collisions by Race/Ethnicity (2017-2021)

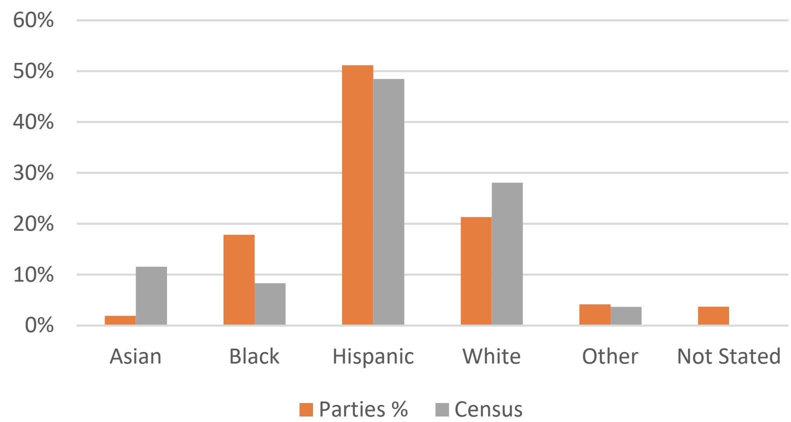
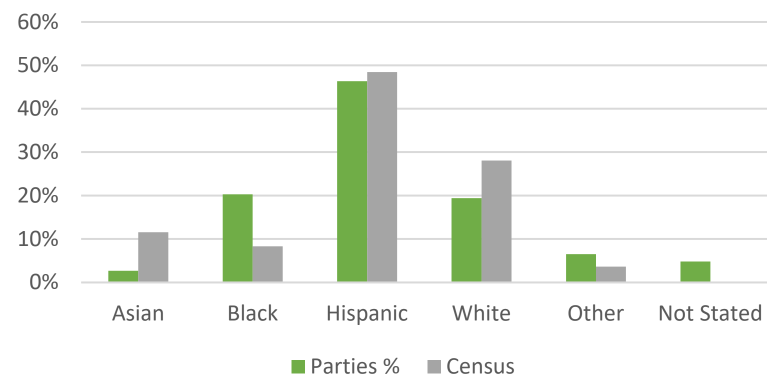


Figure 27. All Pedestrian Parties Involved in Collisions by Race/Ethnicity (2017-2021)



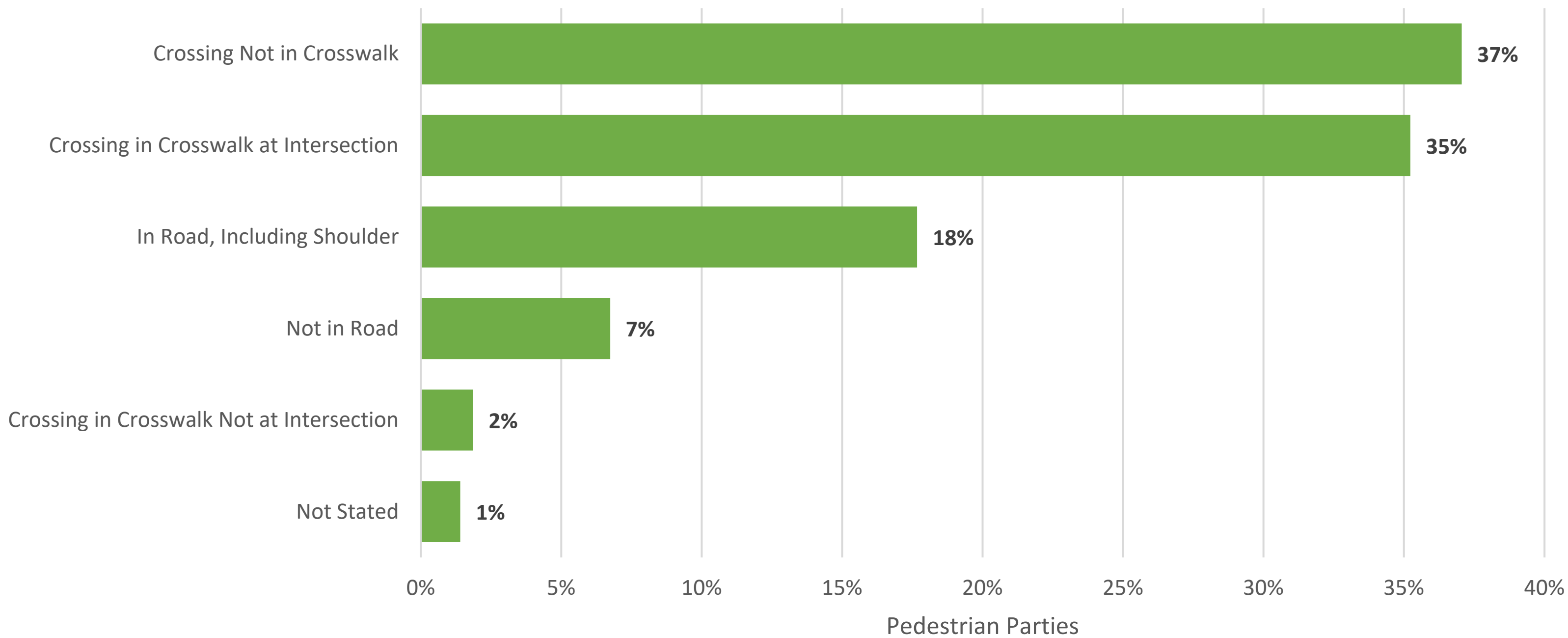
Note: Current reporting practices require that the race and ethnicity of an individual are recorded for parties involved in a collision, but not victims. For this reason, bicyclist and pedestrian collisions by race and ethnicity are evaluated at the party level.

Behavioral Trends: 2017-2021

Pedestrian Actions

- 37% of pedestrian-involved KSI collisions involved a pedestrian crossing outside of a crosswalk.*
- 35% of pedestrian-involved KSI collisions involved a pedestrian crossing in a crosswalk at an intersection.

Figure 28. Citywide Pedestrian Actions Prior to a KSI Collision (2017-2021)

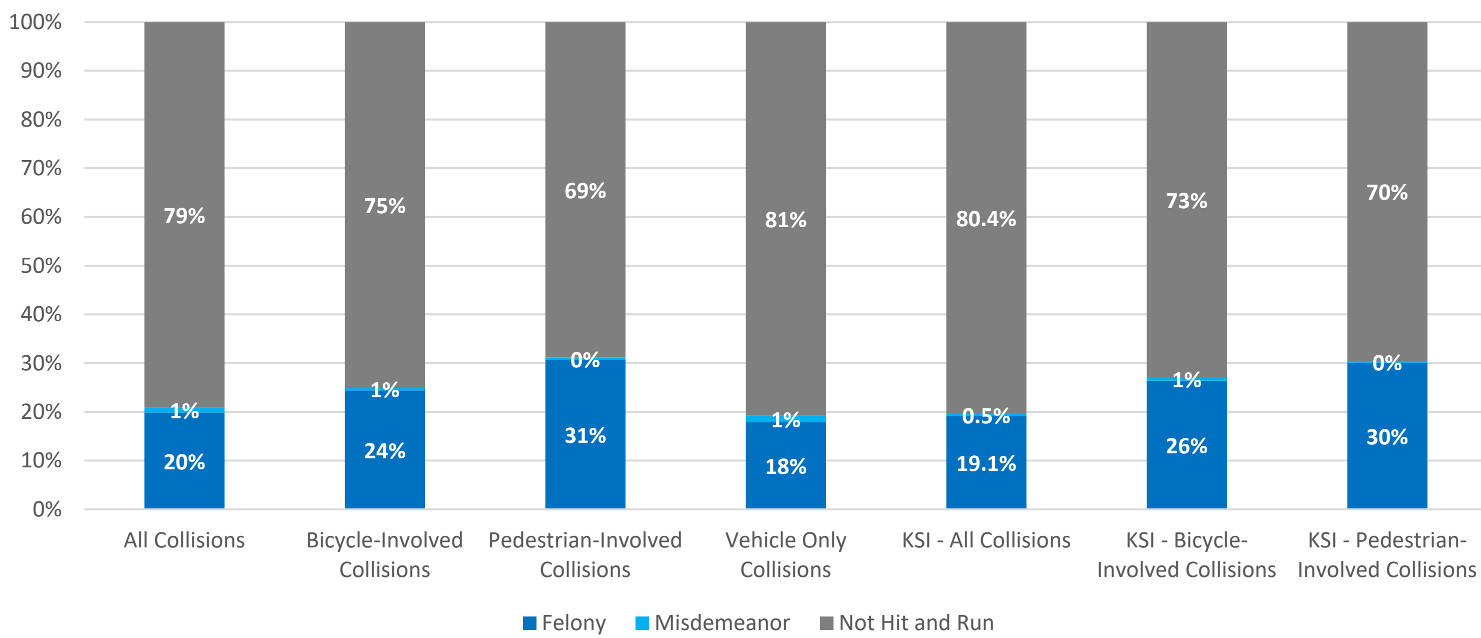


*Note: The California Highway Patrol (CHP) handbook does not explicitly address marked versus unmarked crosswalks for actions prior to a collisions – other places in the handbook do make the distinction. LAPD training or the reporting officer's discretion determines how these characteristics are reported. For the purposes of analysis, we make the assumption that this refers to marked crosswalks. The crossing in crosswalk not at an intersection category likely refers to midblock locations with marked crosswalks.

Hit-and-Run Collisions

- Between 2017 and 2021, hit-and-run accounted for approximately 20% of all KSI collisions, 27% of bicycle-involved KSI collisions and 30% of pedestrian-involved KSI collisions. When combining pedestrian- and bicycle-involved KSI collisions, hit-and-runs account for 29% of collisions.
- Since the 2017 study, the proportion of hit-and-run collisions increased for KSI collisions, and pedestrian and bicycle-involved combined KSI collisions. The 2017 study reported that hit-and-run collisions accounted for 18% of KSI collisions, and 22% of pedestrian and bike combined KSI collisions.

Figure 29. Citywide Percentage of Hit-and-Run Collisions (2017-2021)

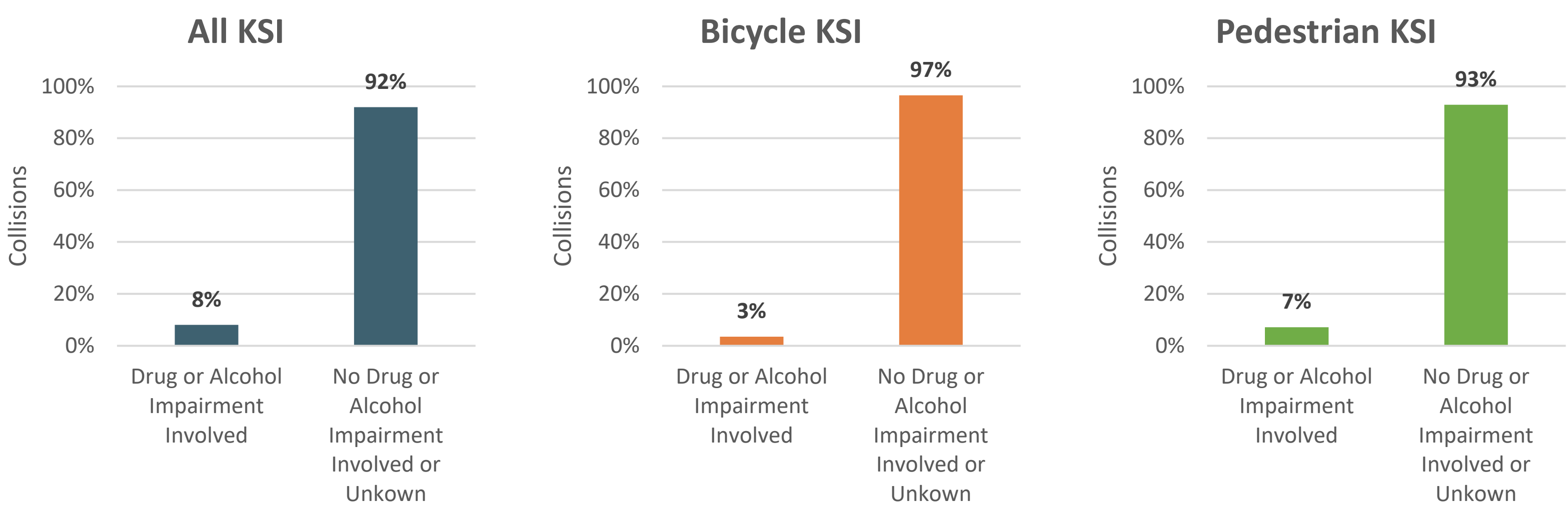


Note: California Vehicle Code § 20001 covers the crime of a hit and run that is considered a felony, and California Vehicle Code § 20002 is covers the crime of a hit and run that is considered a misdemeanor. A hit and run that involves property damage is typically charged as a misdemeanor, while a hit and run causing any injury or death may be charged as a felony offense.

"Driving Under the Influence" of Alcohol or Drugs (DUI) Collisions

- Drug or alcohol impairment was involved in approximately 8% of all KSI collisions. In the 2017 Safety Study, 6% of pedestrian and bicycle KSI collisions involved DUIs.

Figure 30. Citywide Percentage of DUI-Involved KSI Collisions by Mode (2017-2021)



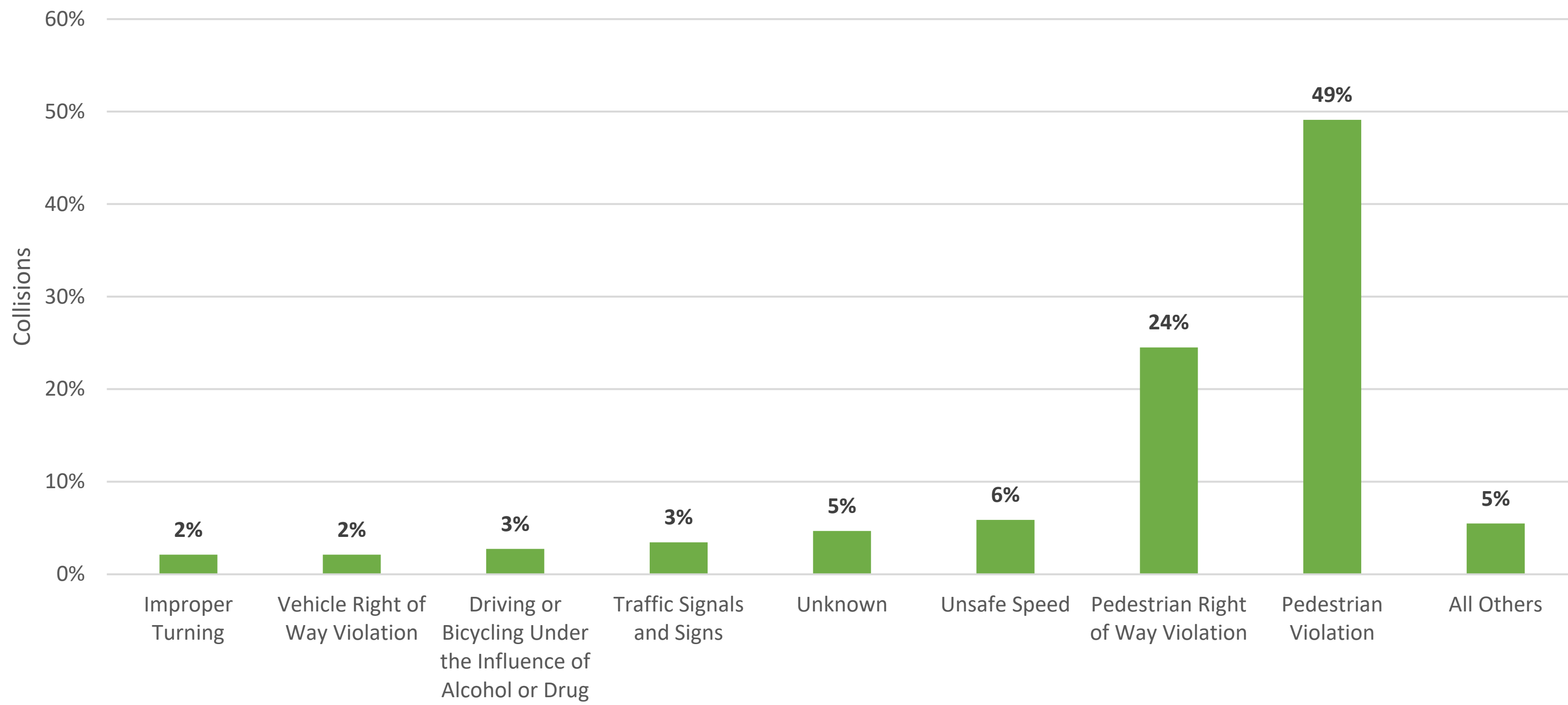
Note: For collisions that involved a bicyclist or pedestrian, the impaired individual could have been a vehicle driver and/or the pedestrian and bicyclist.

Violation Types

- Primary Collisions Factor (PCF) Violation Category Code are not always intuitive. Select violation types are described below:
  - Vehicle Right of Way Violation: covers a party (of any mode) not yielding to the driver's right-of-way or the driver observing his or her right-of-way improperly. A common citation under this category is for drivers who do not yield to oncoming traffic during a left turn or U-turn. Other citations include not yielding properly at a stop sign, and not yielding when entering a road from a property. While the title specifies vehicle, a vehicle hitting a person on a bicycle and not yielding to pedestrians for right turns on red can also be cited.
  - Pedestrian Right of Way Violation: covers drivers violating a pedestrian's right-of-way. A common citation is for drivers not yielding at a crosswalk. It also includes drivers not yielding to a pedestrian on a sidewalk, such as at a driveway.
  - Pedestrian Violation: covers pedestrians not following a rule of the road. In 2022, the Freedom to Walk Act (AB-2147) was passed, which allows people to jaywalk or cross outside of an intersection without being ticketed, provided there is no immediate danger. Prior to AB-2147, a pedestrian violation would be cited if a pedestrian was crossing unsafely outside of a crosswalk and not yielding to vehicles. Pedestrian Violations also include pedestrians crossing improperly during the flashing "Don't Walk" or red phase of a signal, pedestrians suddenly leaving the curb, and pedestrians walking in the roadway on the right-hand side of the road.
  - Improper Turning: covers turns at intersections and turning off of a road, plus proper signaling during lane changes. A common citation under this category is for drivers who move left or right on a roadway when it is not safe or without signaling. It also covers drivers making an illegal U-turn, turning from a lane that does not allow turns, or making a turn that is signed as prohibited.
  - Traffic Signals and Signs: covers drivers not observing the rules of a particular signal or sign. Common citations under the category involve a vehicle not stopping at the limit line or stop bar at a signal or stop sign, respectively, or the crosswalk if neither is present. This includes running red lights. If a vehicle stops but then does not yield properly to another vehicle in the intersection, it is included under the Vehicle Right of Way Violation category.
  - Unsafe Speed: covers people driving "at a speed greater than is reasonable or prudent having due regard for weather, visibility, the traffic on, and the surface and width of" the roadway, and driving at a speed that endangers others. It does not necessarily imply that someone has driven above the speed limit. Even in collisions where "Unsafe Speed" is not the primary violation type, speed is often a factor in severe and fatal collisions.

- Pedestrian Violations account for nearly half of pedestrian-involved KSI collisions, and Pedestrian Right of Way Violations account another approximate quarter of collisions. Pedestrian Violations cover pedestrians not following a rule of the road, as found by the reporting officer. A common citation is for a pedestrian crossing outside of a crosswalk and not yielding to vehicles. The Pedestrian Right of Way violation category covers drivers violating a pedestrian's right-of-way. A common citation is for drivers not yielding at a crosswalk.
- The 2017 Safety Study found that Pedestrian Right of Way violations (defined as "Failure to Yield" in the study) accounted for a slightly higher share of pedestrian KSI collisions, 26%.

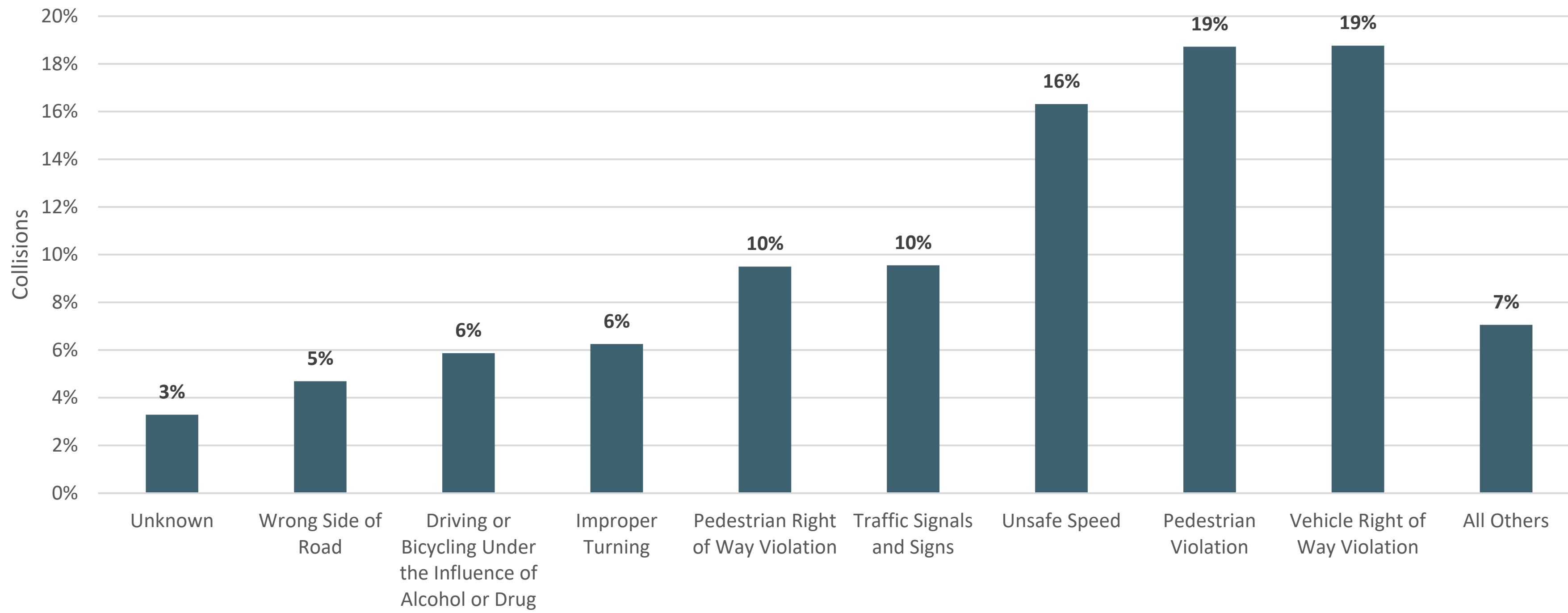
Figure 31. Citywide Percentage of Pedestrian-Involved KSI Collisions by Primary Violation Type (2017-2021)



Note: Categories representing fewer than 2% are grouped into "All Others"

- The top primary violation category for KSI collisions is Vehicle Right of Way Violation, accounting for 19% of KSI collisions. This violation category generally covers a party (of any mode) not yielding to the driver's right-of-way or the driver observing his or her right-of-way improperly, depending on which party is listed at fault. A common citation under this category is for drivers who do not yield to oncoming traffic during a left turn or U-turn.
- The second most frequent violation category for KSI collisions is Pedestrian Violation, accounting for 19% of KSI collisions. Pedestrian Violations cover pedestrians not following a rule of the road, as found by the reporting officer. A common citation is for a pedestrian crossing outside of a crosswalk and not yielding to vehicles.

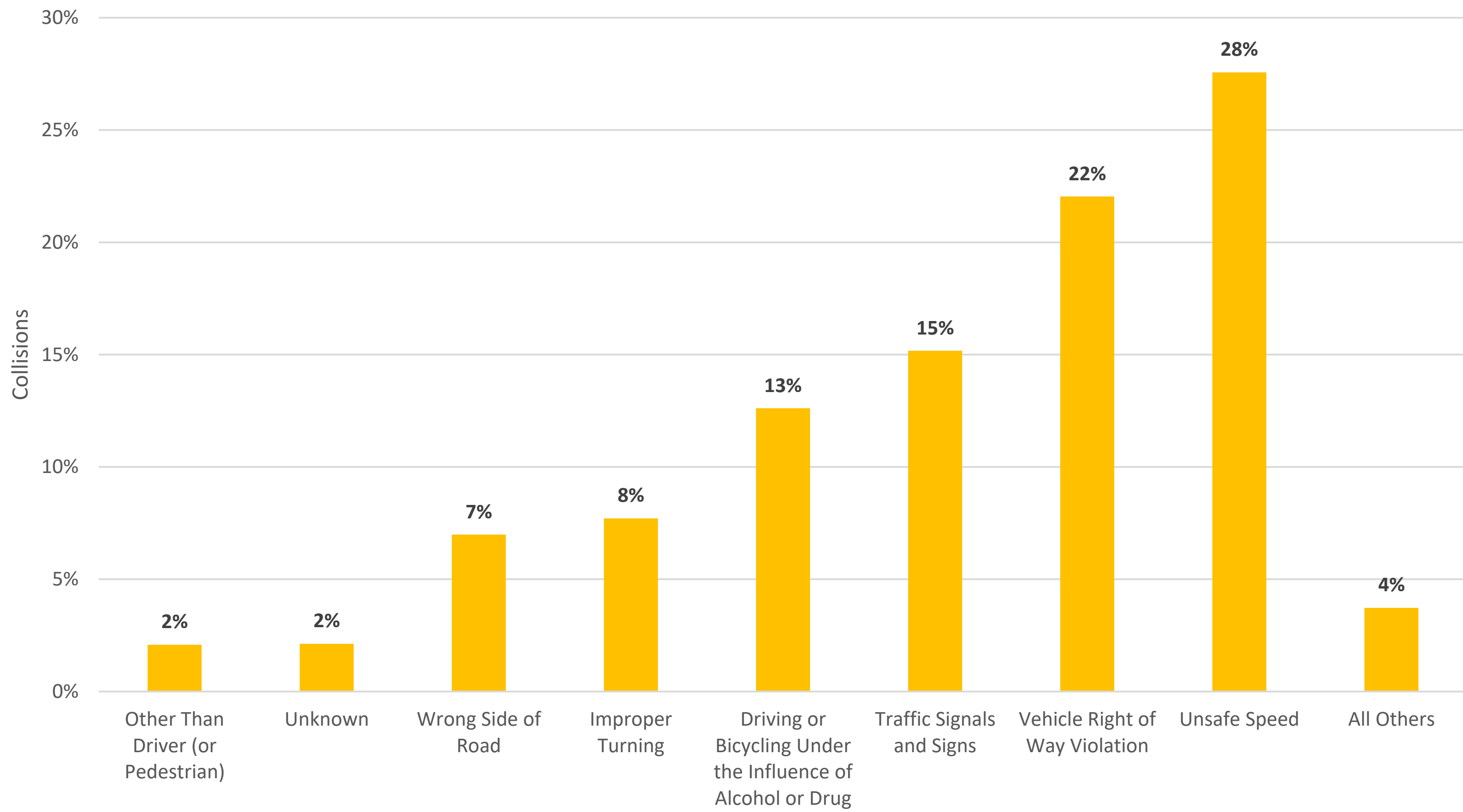
Figure 32. Citywide Percentage of KSI Collisions by Primary Violation Type (2017-2021



Note: Categories representing fewer than 2% are grouped into "All Others"

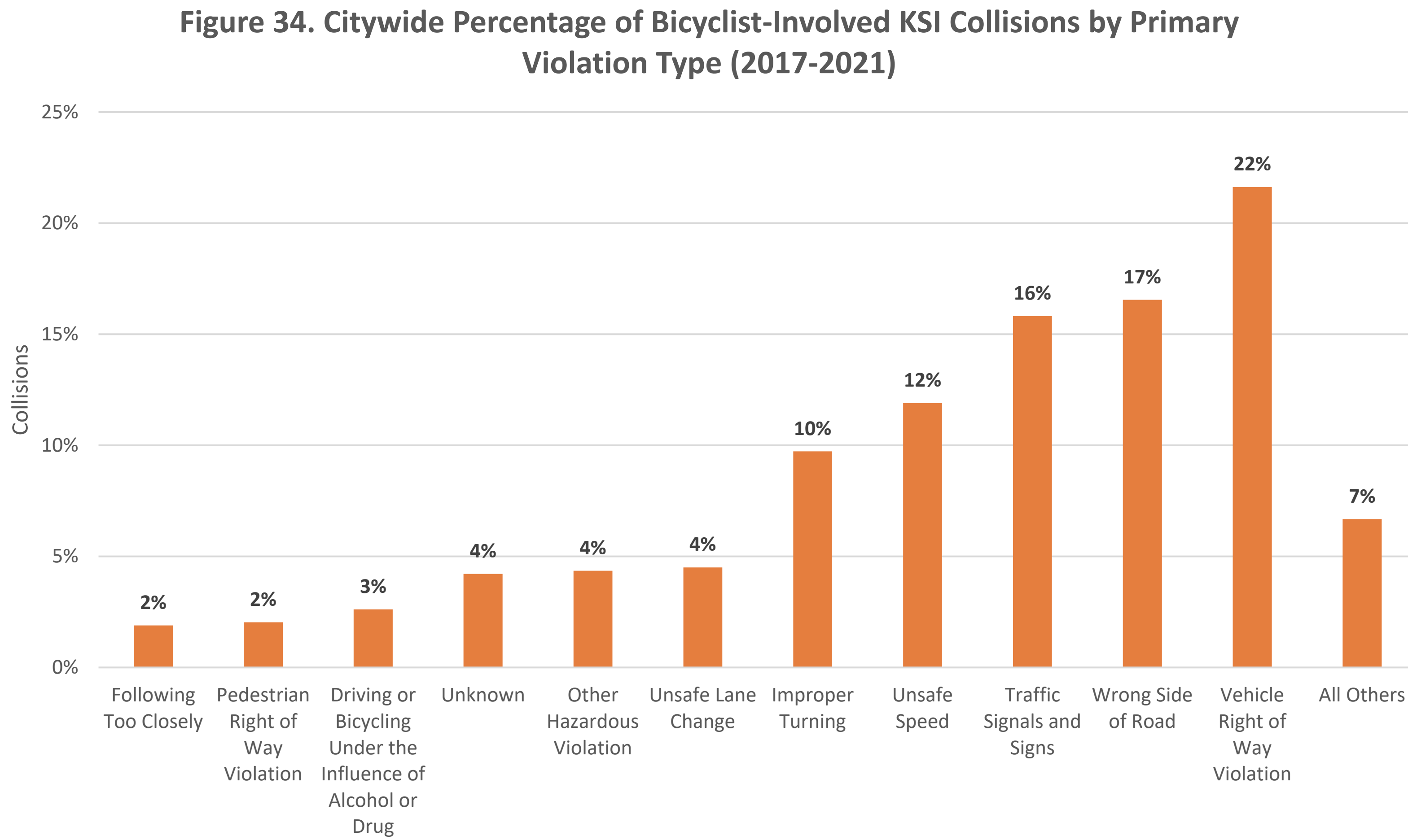
- Unsafe speed was the leading violation vehicle only KSI collisions, representing approximately 28%.

Figure 33. Citywide Percentage of Vehicle Only KSI Collisions by Primary Violation Type (2017-2021)



Note: Categories representing fewer than 2% are grouped into "All Others"

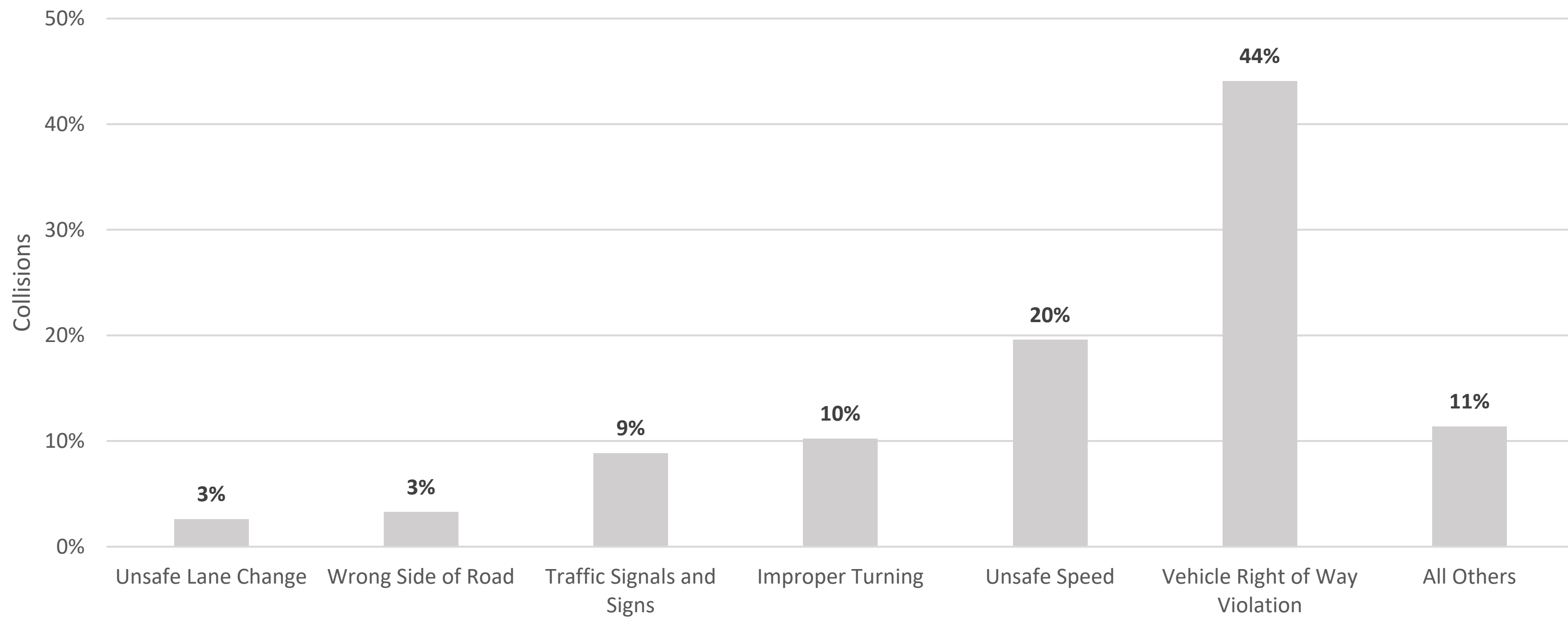
- Vehicle right of way violations were the leading violation type association for bicycle KSI collisions, representing 22% of such collisions. 17% of bicycle KSI collisions involved wrong side of the road as the primary violation, and another 16% involved traffic signals and signs at the primary violation.



Note: Categories representing fewer than 2% are grouped into "All Others"

- Vehicle right of way violations were the leading violation type association for motorcycle KSI collisions, representing 44% of such collisions. In the 2017 Safety Study, this number was 42% (defined in the Safety Study as "drivers failing to yield").
- Unsafe Speed was the primary violation in 20% of motorcycle KSI collisions.

Figure 35. Citywide Percentage of Motorcycle KSI Collisions by Primary Violation Type (2017-2021)

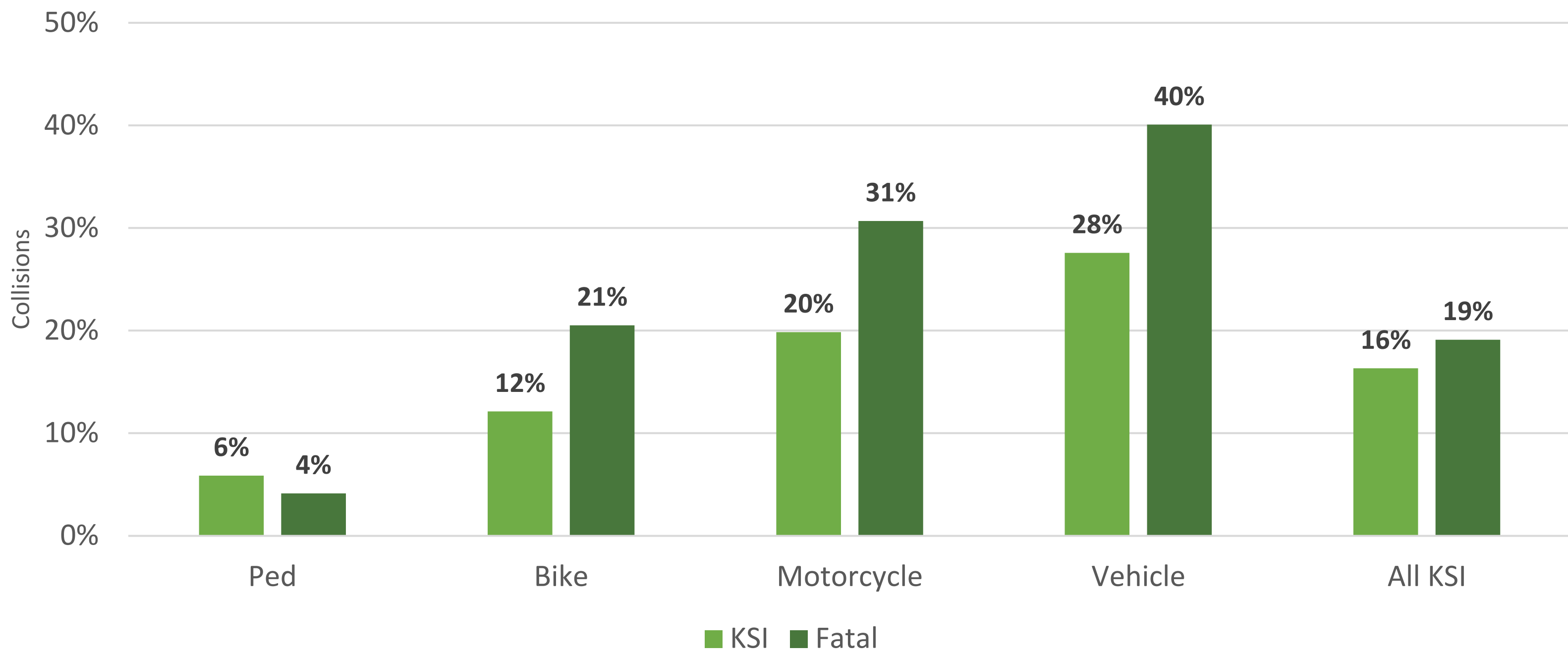


Note: Categories representing fewer than 2% are grouped into "All Others"

Unsafe Speed

- Unsafe Speed is the primary violation type in 40% of vehicle-only collisions that resulted in a fatality.
- Even in collisions where Unsafe Speed is not the primary violation type, speed is almost always a factor in severe and fatal collisions. For example, the primary violation in a pedestrian collision is almost always coded as Pedestrian Violation or Pedestrian Right of Way Violation, even when vehicle speed is a key factor in collision severity.

Figure 36. Citywide Percentage of KSI and Fatal Collisions with Unsafe Speed as the Primary Violation Type (2017-2021)

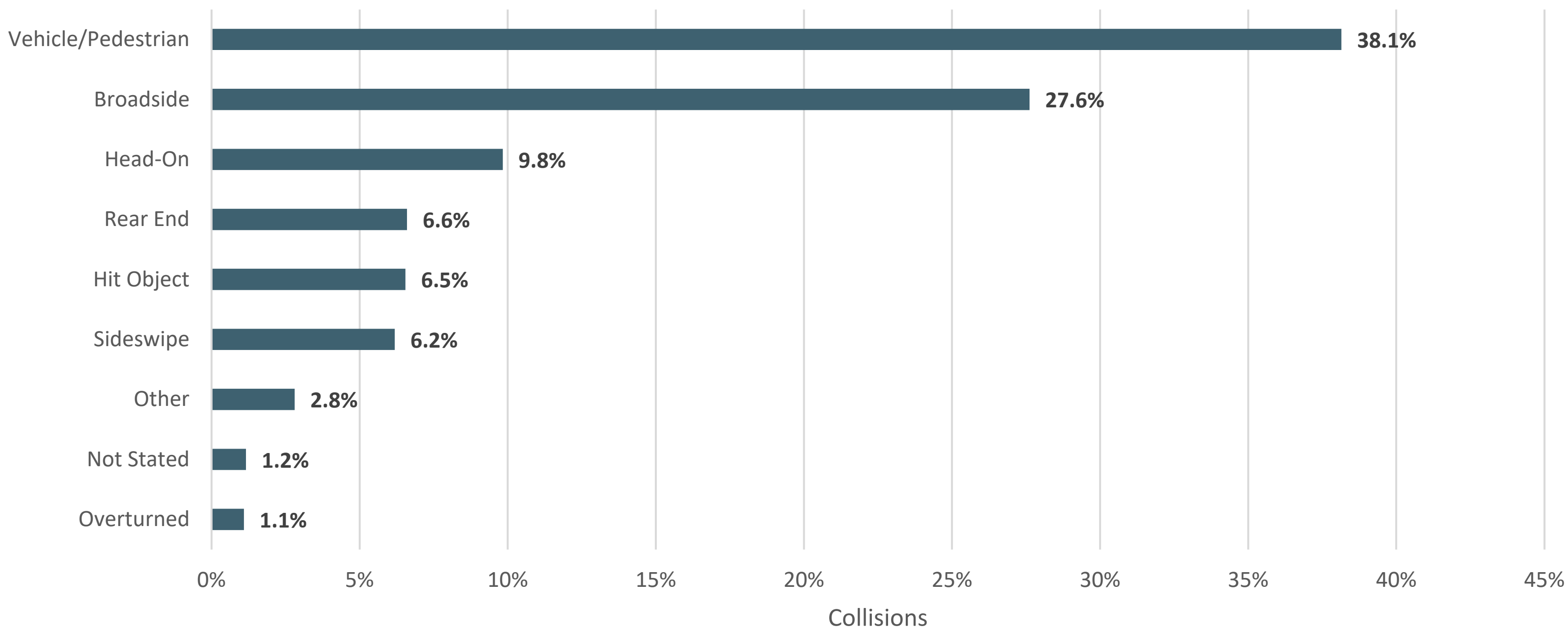


Note: If the reporting officer determines that speed was a collision factor – though not the primary collision factor – they may note it on the crash report.

Collision Type

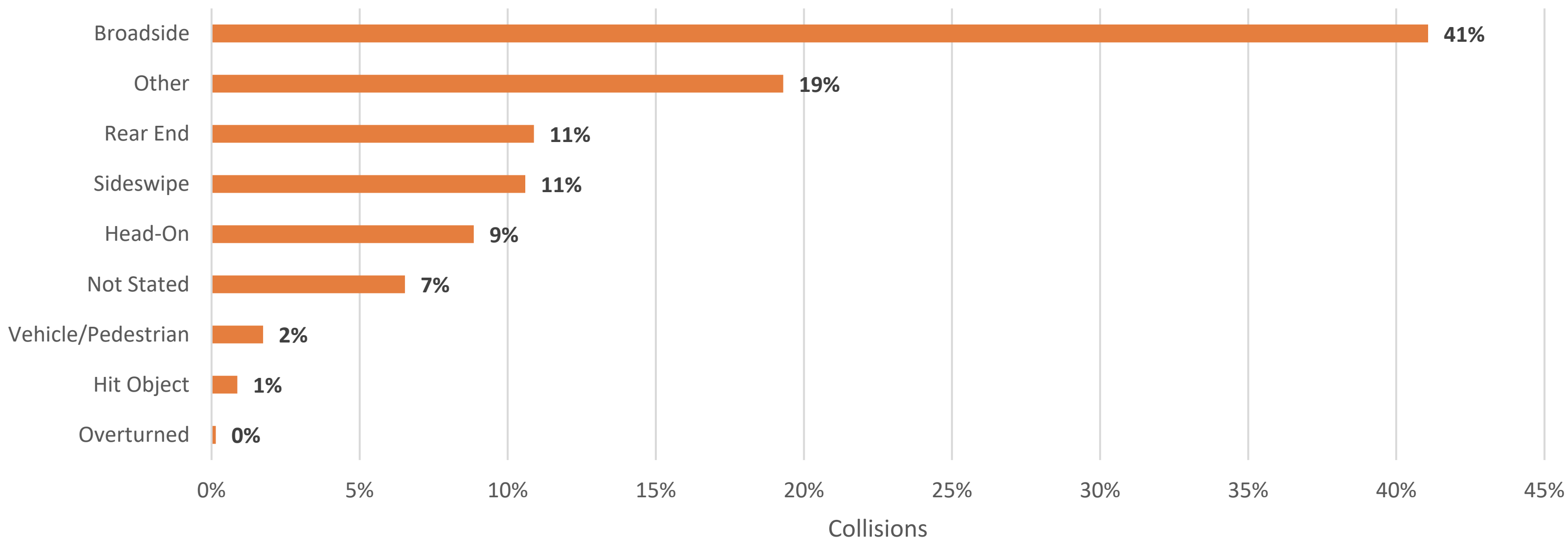
- Approximately 38% of KSI collisions were classified as Vehicle/Pedestrian and 28% of KSI collisions were classified as Broadside collisions. In the 2017 Safety Study, Vehicle/Pedestrian collisions were the top collision type, but accounted for a smaller share of KSI collisions at 31%.

Figure 37. Citywide Percentage of KSI Collisions by Collision Type (2017-2021)



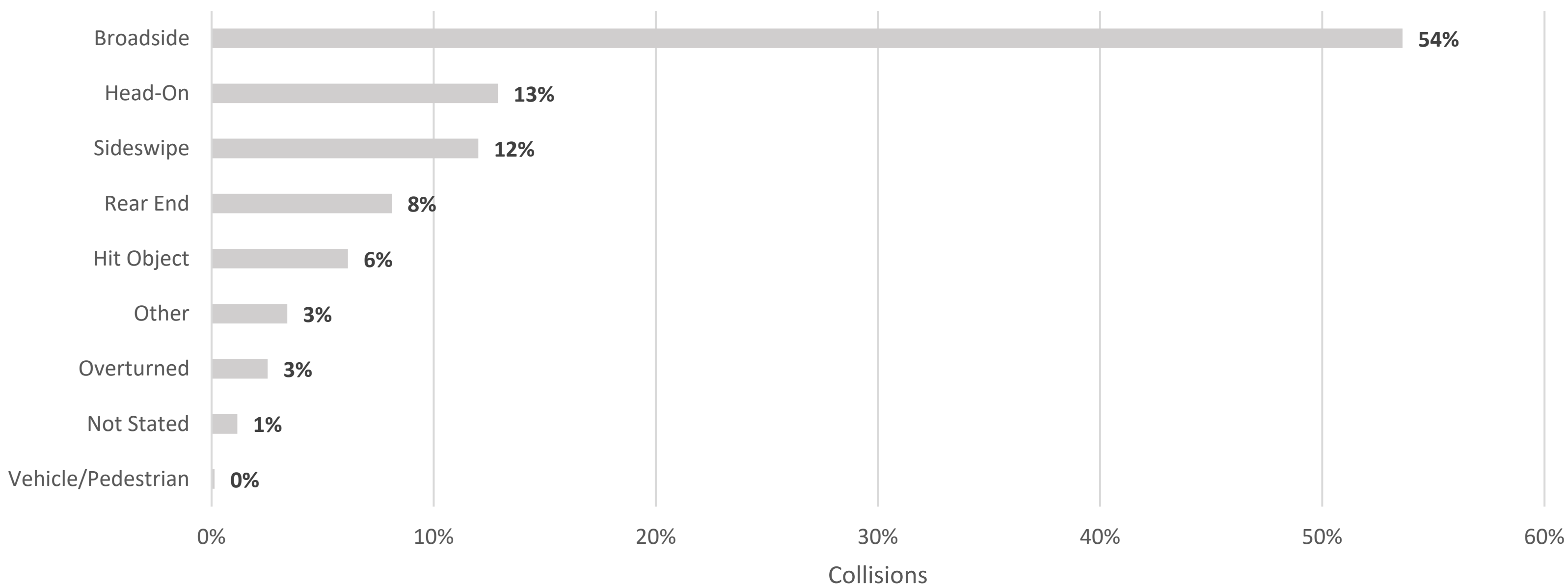
- 41% of bicycle KSI collisions were broadside collisions.

Figure 38. Citywide Percentage of Bicycle KSI Collisions by Collision Type (2017-2021)



- More than half of motorcycle KSI collisions were broadside collisions. This trend is slightly higher than the 2017 Safety Study at 52%.

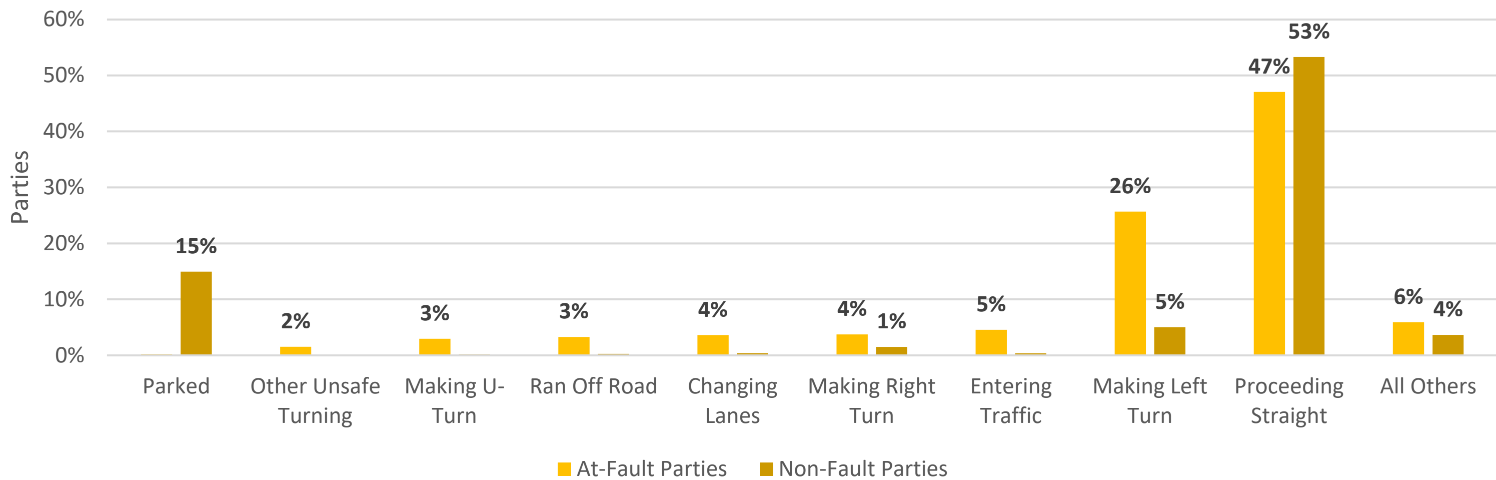
Figure 39. Citywide Percentage of Motorcycle KSI Collisions by Collision Type (2017-2021)



Turning Movements

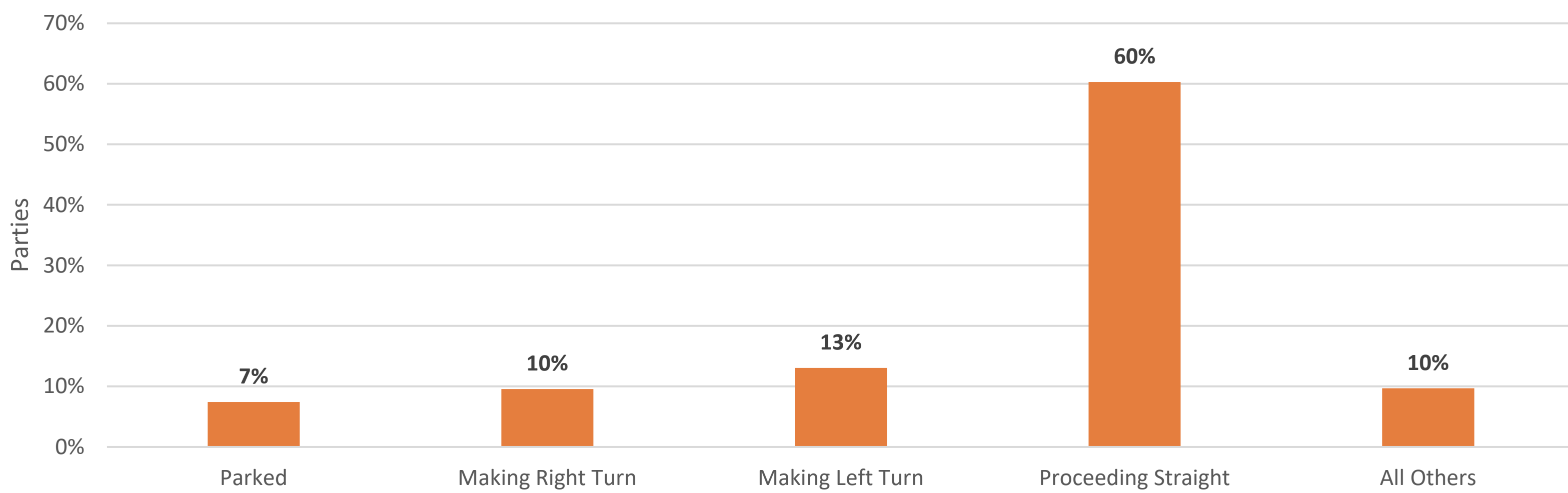
- 47% of drivers at fault in KSI vehicle-only collisions were proceeding straight at the time of the collision. 26% of drivers at fault were making a left turn.

Figure 40. Citywide Percentage of At-Fault Party Actions in Vehicle-Only KSI Collisions (2017-2021)



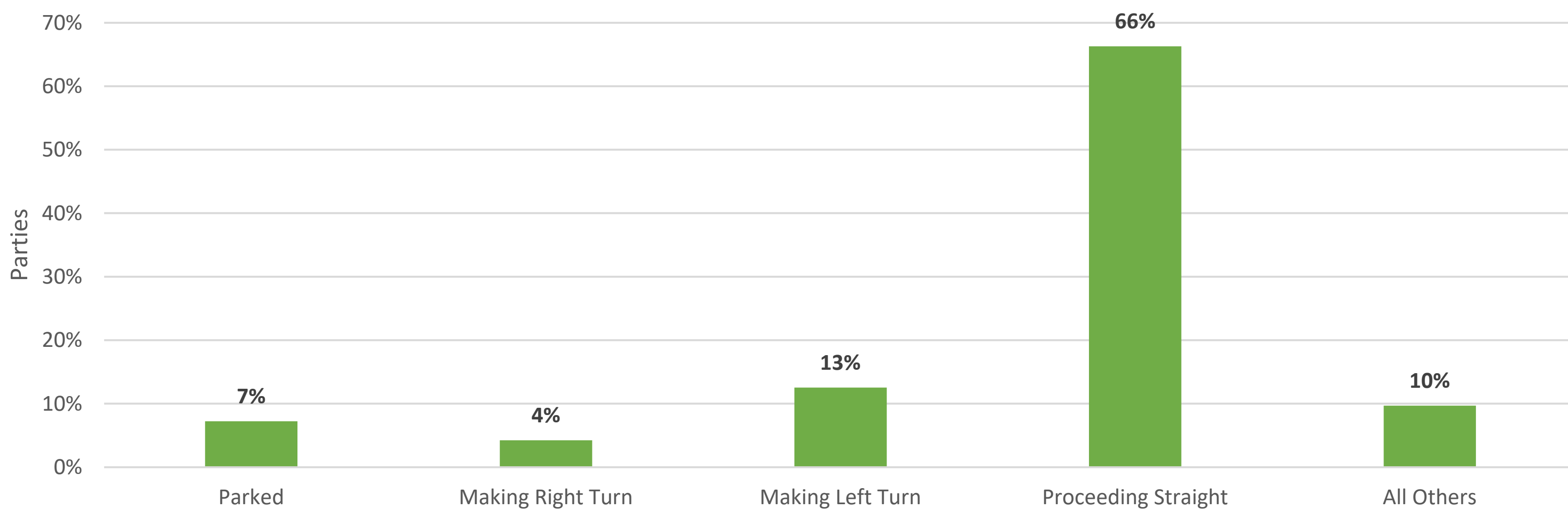
- The majority of drivers in KSI bicyclist-involved collisions were proceeding straight at the time of the collision. Approximately 23% of drivers were making a left or right turn at the time of the collision.

Figure 41. Citywide Percentage of Driver Actions in Bicyclist-Involved KSI Collisions (2017-2021)



- The majority of drivers – 66% – in KSI pedestrian-involved collisions were proceeding straight at the time of the collision. This is a smaller percentage than in the 2017 Safety Study, which reported 71%.
- Approximately 13% of drivers were making a left turn at the time of the collision, and 4% were making a right turn. The 2017 Safety Study reports the same approximate percentages.

Figure 42. Citywide Percentage of Driver Actions in Pedestrian-Involved KSI Collisions (2017-2021)

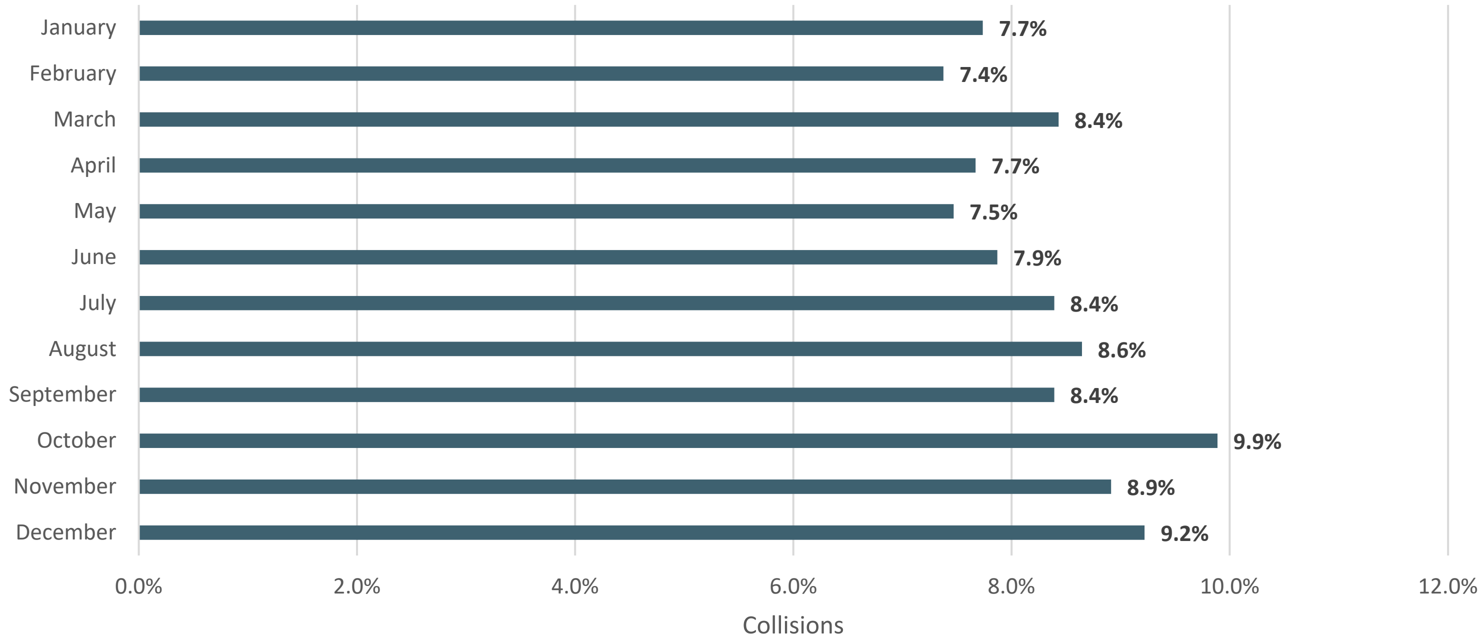


Temporal Trends: 2017-2021

Months

- October, November and December experienced the highest number of KSI collisions, representing a consecutive pattern in the fall and winter.

Figure 43. Citywide Percentage of KSI Collisions by Month (2017-2021)



- KSI collisions are generally correlated with seasonal sunset cycles, with more collisions occurring after the sun has set.

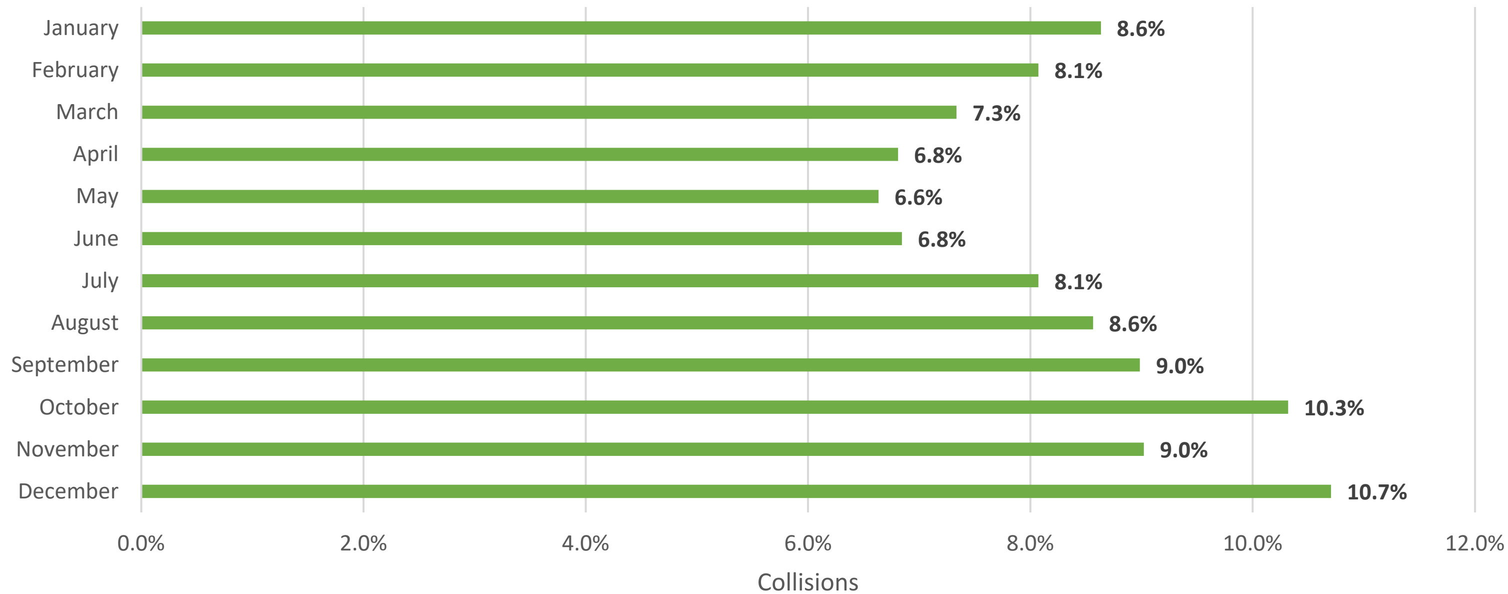
Figure 44. Citywide KSI Collisions by Month and Time of Day (2017-2021)

Month	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Sunset 2021
January	19	12	21	12	11	20	16	20	20	17	10	18	17	25	18	17	24	60	54	53	41	30	26	18	0	17:07
February	17	18	10	10	9	16	17	13	19	14	20	16	17	28	26	21	17	31	52	48	45	32	27	29	0	17:35
March	19	23	14	11	12	16	22	27	20	16	21	25	17	18	30	31	28	28	47	53	42	47	29	34	1	18:35
April	22	17	14	12	6	12	8	13	17	21	16	18	37	24	33	27	26	31	39	39	41	44	29	27	1	19:23
May	19	30	27	15	8	11	16	16	18	12	13	22	27	19	20	19	30	29	37	20	40	39	39	33	0	19:46
June	30	17	17	13	7	19	5	21	18	16	18	26	15	31	25	26	30	26	36	23	47	56	40	26	1	20:03
July	23	24	24	10	14	7	17	23	23	19	25	11	23	14	29	25	31	36	34	28	48	69	36	34	1	20:01
August	24	20	16	11	10	19	14	18	17	23	19	17	23	20	17	18	30	36	52	51	67	54	35	35	1	19:36
September	26	17	22	17	9	14	22	20	32	17	17	15	20	11	27	23	32	31	40	53	37	46	46	32	2	18:56
October	15	16	14	11	16	29	42	29	25	19	26	25	20	20	33	38	29	44	53	58	56	49	39	33	1	18:16
November	11	22	15	14	13	16	22	22	26	13	18	19	11	24	27	33	27	73	65	63	38	31	42	21	1	17:00
December	16	23	14	12	9	20	18	21	26	17	20	25	28	19	24	44	31	70	65	49	37	43	30	27	2	16:45

Note: Category "24" represents unknown times in the crash report.

- October and December had the highest number of pedestrian-involved KSI collisions (approximately 10%-11% each month). The 2017 Safety Study states that pedestrian collisions are more common in the fall and winter months.

Figure 45. Citywide Percentage of Pedestrian-Involved KSI Collisions by Month (2017-2021)



- Pedestrian KSI collisions are generally correlated with seasonal sunset cycles, with more collisions occurring after the sun has set.

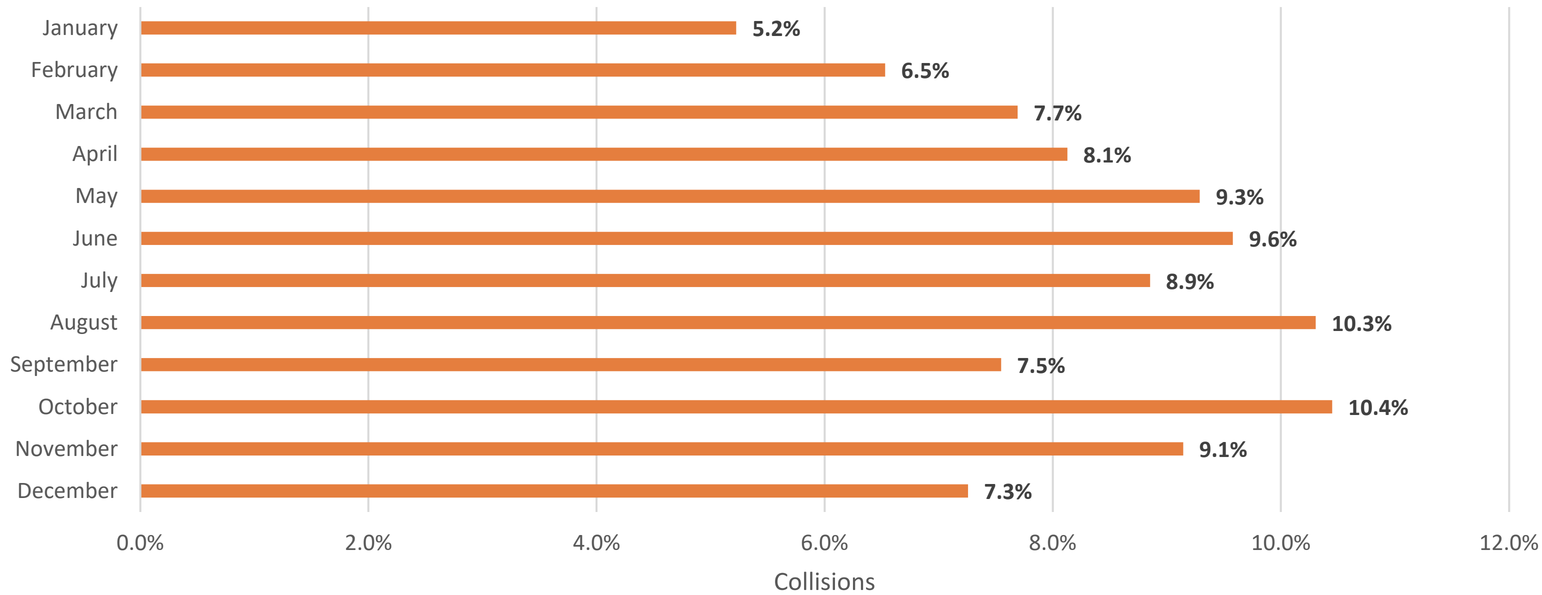
Figure 46. Citywide Pedestrian KSI Collisions by Month and Time of Day (2017-2021)

Month	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Sunset 2021
January	8	3	8	4	6	8	12	12	11	11	3	5	3	6	5	5	7	25	27	24	20	15	11	7	0	17:07
February	6	13	2	3	4	10	9	6	3	4	7	4	9	9	7	7	6	9	25	27	21	15	13	11	0	17:35
March	7	6	3	3	3	8	12	13	4	7	7	6	5	4	4	10	4	5	17	21	20	17	12	10	1	18:35
April	11	7	5	2	2	8	2	5	2	9	3	4	8	10	7	3	7	9	13	13	14	23	14	12	1	19:23
May	4	14	5	6	2	4	3	5	3	3	1	7	13	4	7	2	10	12	8	4	21	19	20	12	0	19:46
June	14	7	4	5	3	6	2	5	7	4	5	6	4	7	3	13	4	4	7	7	15	32	18	13	0	20:03
July	13	5	9	3	4	2	5	12	7	4	10	2	9	4	6	5	5	7	10	4	25	41	22	15	1	20:01
August	14	9	8	5	8	10	2	7	6	6	3	5	7	8	2	3	8	9	15	14	29	27	18	20	1	19:36
September	16	6	5	5	2	6	10	7	13	5	4	3	5	5	8	4	9	9	19	25	21	29	24	16	0	18:56
October	4	9	5	3	6	15	24	12	12	6	7	4	3	5	7	12	11	13	26	27	22	21	20	19	1	18:16
November	3	6	3	2	8	9	10	9	9	2	5	7	1	7	9	9	7	33	29	36	16	9	19	9	0	17:00
December	3	6	6	5	4	9	7	9	8	6	10	9	13	8	10	16	10	31	44	27	20	20	10	13	1	16:45

Note: Category "24" represents unknown times in the crash report.

- June, August and October had the highest percentage of bicyclist-involved KSI collisions (approximately 10% each month). The 2017 Safety Study states that bicycle collisions are more common in the summer months.

Figure 47. Citywide Percentage of Bicyclist-Involved KSI Collisions by Month (2017-2021)



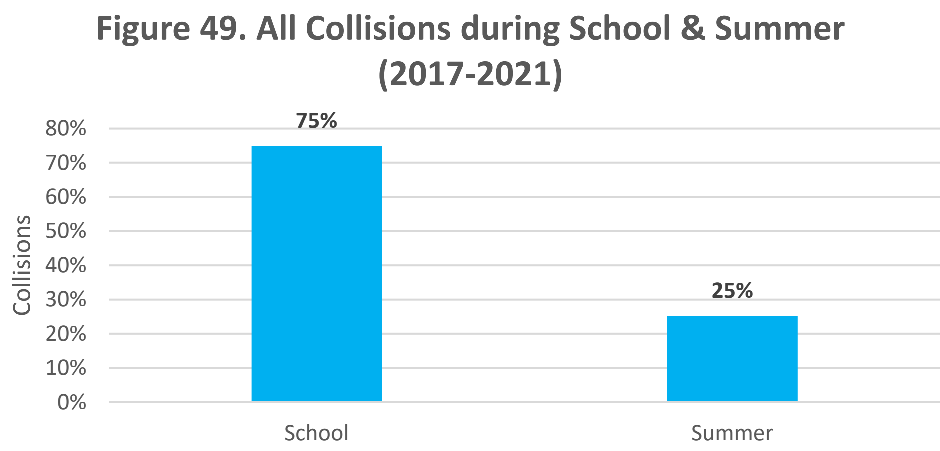
- Bicycle KSI collisions are less correlated with seasonal sunset cycles relative to all KSI and pedestrian-involved collisions, but there does appear to be more bicycle KSI collisions in the latter half of the day.

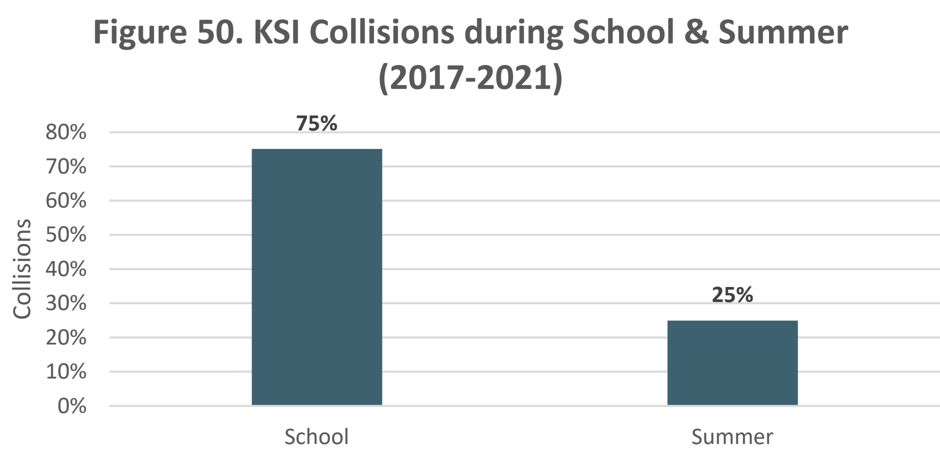
Figure 48. Citywide Bicycle KSI Collisions by Month and Time of Day

Month	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Sunset 2021
January	0	2	1	0	0	3	0	3	1	1	0	3	2	2	0	0	3	6	3	3	2	0	1	0	0	17:07
February	0	0	2	2	0	1	1	0	1	2	2	0	4	5	0	3	5	1	2	3	5	3	2	1	0	17:35
March	0	0	1	0	1	2	1	2	1	2	4	1	3	1	3	2	3	5	2	3	4	7	4	1	0	18:35
April	3	0	0	1	1	1	0	2	3	3	2	2	8	1	3	3	4	3	2	4	4	4	0	2	0	19:23
May	1	0	2	1	0	2	1	3	3	1	1	3	1	1	3	5	2	6	10	3	3	4	1	7	0	19:46
June	2	1	0	1	0	0	1	5	2	3	2	4	3	1	6	2	7	2	7	5	5	2	2	2	1	20:03
July	0	2	1	1	1	0	4	2	3	3	2	0	1	1	6	4	6	5	3	4	4	4	2	2	0	20:01
August	1	0	4	1	0	0	1	2	2	4	3	4	1	2	2	4	5	2	12	6	8	2	1	4	0	19:36
September	0	1	1	1	1	0	1	1	3	2	3	3	1	1	1	2	7	4	4	4	4	1	3	3	0	18:56
October	0	1	0	2	0	1	3	3	3	0	1	7	3	2	4	2	5	8	5	5	8	2	6	1	0	18:16
November	0	1	2	1	1	1	2	1	1	1	1	3	4	0	3	5	4	8	5	7	5	2	3	1	1	17:00
December	0	1	1	1	0	3	0	2	3	1	1	1	3	1	1	5	4	8	5	2	1	4	1	1	0	16:45

Note: Category “24” represents unknown times in the crash report.

- Given that school months represent 75% of the year, and summer months 25%, collisions were evenly distributed between school and summer months.



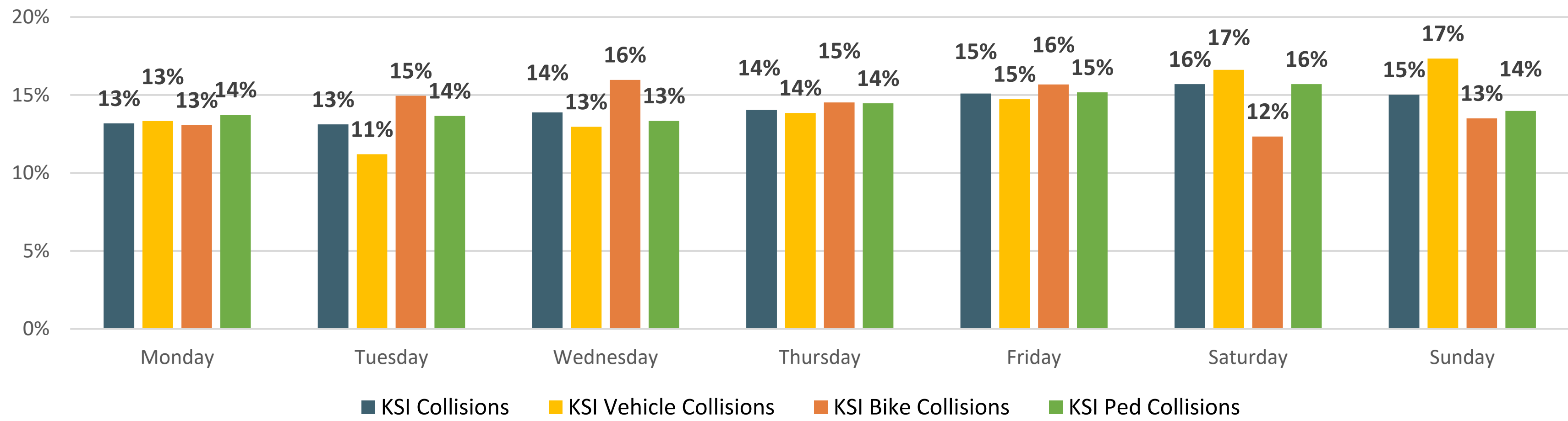


Note: School months were defined as September-May, and Summer months June-August.

Days

- KSI collisions occur slightly more frequently during the weekends on Fridays, Saturdays and Sundays. Bike KSI collisions follow a different pattern, occurring more frequently on weekdays, compared with all KSI collisions.
- The 2017 Safety Study found that vehicle-only collisions occurred more frequently on the weekends, which is a trend that holds true in this newer data.

Figure 51. Citywide Percentage of KSI Collisions by Day of the Week (2017-2021)



- When looking at holidays, Halloween recorded the highest number of collisions and KSI collisions. Halloween is the only holiday that exceeds the expected average daily collisions (approximately 258 collisions on a given day for the full 5-year dataset). When looking at KSI collisions, 4th of July, Labor Day, Halloween and Christmas Eve all exceed the daily average (21 collisions for the full 5-year dataset). Additionally, on Halloween between 2017-2021 there were 2 KSI victims under the age of 15, and 4 over the age of 65.

Figure 52. All Collisions by Holidays (2017-2021)

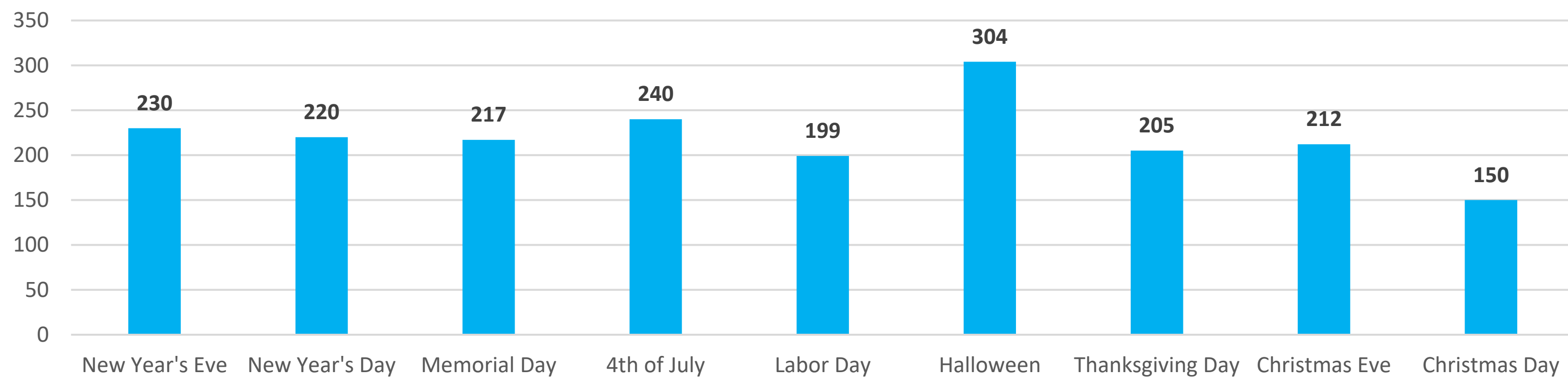
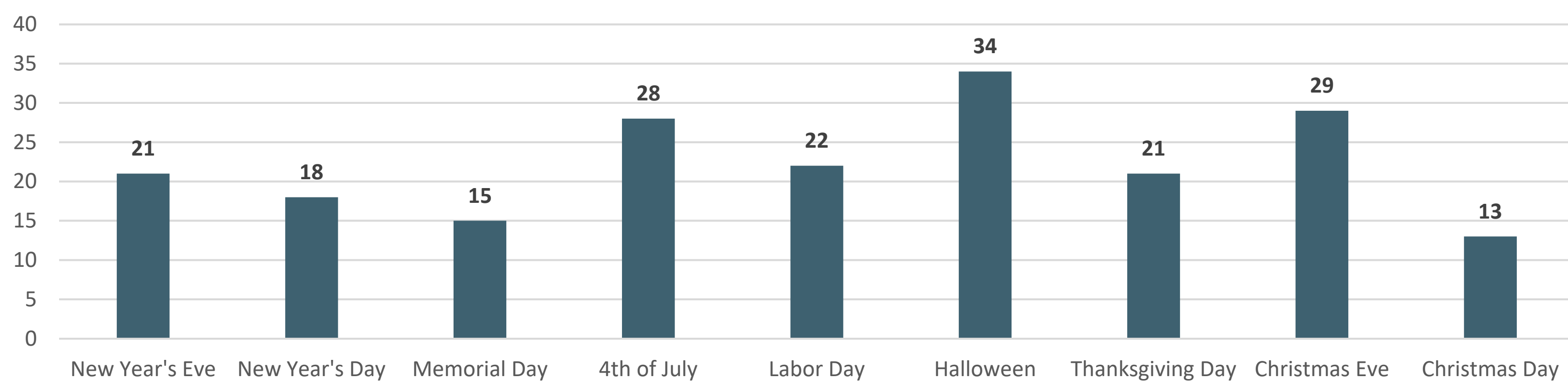


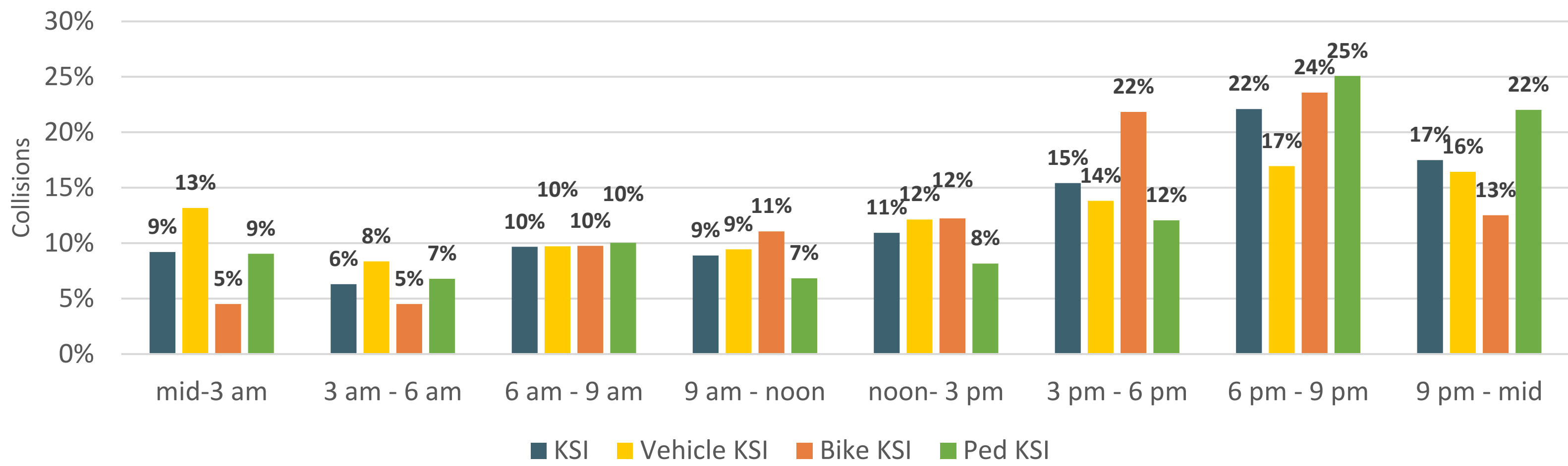
Figure 53. KSI Collisions by Holidays (2017-2021)



Time of Day

- The largest share of KSI collisions across all modes occur between 6 and 9 PM. This trend holds true from the 2017 Safety Study.
- KSI pedestrian collisions also occur with high frequency between 9 PM and midnight, while KSI bicycle collisions tend to occur earlier, with 22% between 3 and 6 PM.

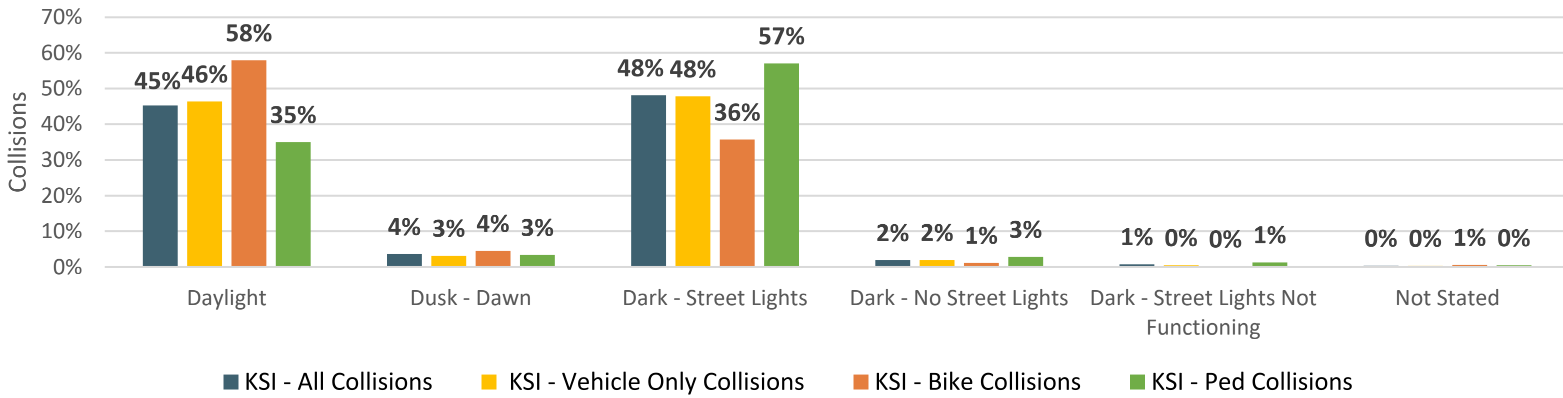
Figure 54. Citywide Percentage of KSI Collisions by Time of Day (2017-2021)



Lighting

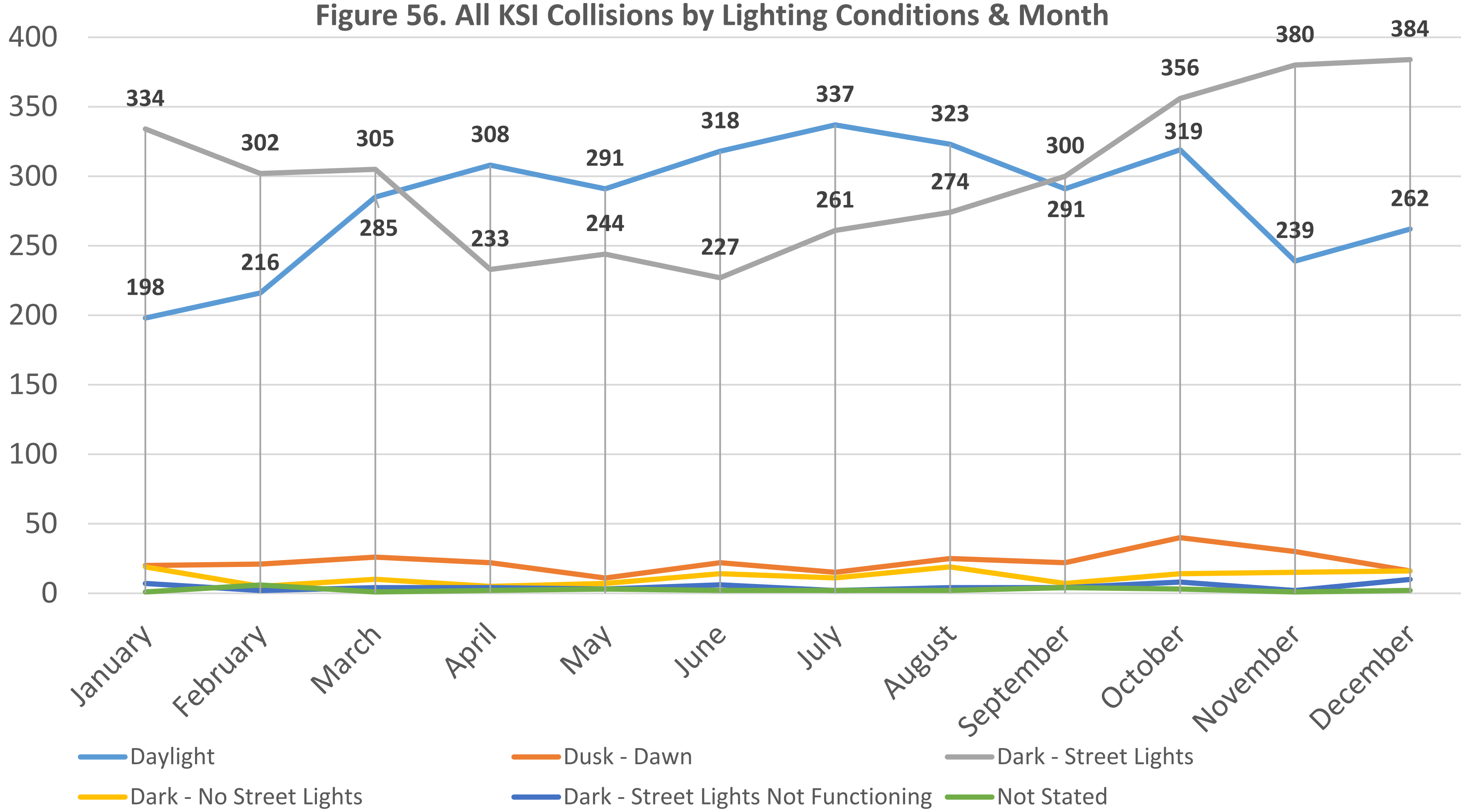
- Vehicle only KSI collisions are approximately equally distributed between daylight and dark with street light conditions; however, bike KSI collisions occurred more often in daylight conditions, and pedestrian KSI collisions occurred more often in dark with street light conditions relative to daylight conditions as recorded by the LAPD reporting officer.

Figure 55. Citywide Percentage of KSI Collisions by Lighting Conditions & Mode (2017-2021)



- KSI collisions for all modes occur more frequently where lighting conditions are dark with street lights in the beginning and end of the year; however, daylight conditions are more common between April and August. This may indicate that time of day may have a considerable influence on the potential for KSI collisions.

Figure 56. All KSI Collisions by Lighting Conditions & Month



Note: Data labels under 50 were removed from the chart (including Dusk-Dawn, Dark – No Street Lights, Dark – Street Lights Not Functioning, and Not Stated).

Comparison to Other Cities

- The City of Los Angeles' collision death rate per 100,000 population increased by 29% between 2012 and 2021, according to data from the National Highway Traffic Safety Administration (NHTSA) Motor Vehicle Crash Data Querying and Reporting. Among the other cities listed in the 2017 Safety Study, Los Angeles had the second highest collision death rate in 2021; however, Los Angeles also had the fourth lowest percent change from 2012 to 2021. All cities, with the exception of New York City, experienced an increase in collision death rate between 2012 and 2021.

Figure 57. NHTSA Collision Death Rate (CDR) per 100,000 population

City	2021 Fatalities	2021 Population	CDR 2021	CDR 2012	Percent Change
Portland	58	647,176	**8.96**	5.31	69%
Los Angeles	**315**	**3,902,440**	**8.07**	**6.27**	**29%**
Chicago	216	2,696,561	**8.01**	5.34	50%
San Diego	109	1,385,398	**7.87**	5.23	50%
San Jose	75	1,013,337	**7.40**	4.27	73%
Seattle	45	726,054	**6.20**	4.26	45%
Boston	30	672,814	**4.46**	3.61	24%
San Francisco	31	865,933	**3.58**	3.51	2%
New York	243	8,736,047	**2.78**	3.21	-13%

2021 Population from 2021 5-year ACS estimates
2012 Source: 2017 Safety Study; National Highway Traffic Safety Administration,
Traffic Safety Facts 2012 (Washington, DC: U.S. Department of Transportation, 2012), accessed November 3, 2016,
https://crashstats.nhtsa.dot.gov/Api /Public/Publication/812032.
2021 Source: Administration (NHTSA) Motor Vehicle Crash Data Querying and Reporting: https://cdan.dot.gov/query

Note: The 2021 Collision Death Rate was calculated using the National Highway Traffic Safety Administration's (NHTSA) Fatality Analysis Reporting System (FARS). This is a national dataset, which is different from the RoadsafeGIS data used for the majority of the analysis, in order to make comparisons across cities.

- The City of Los Angeles' collision death rate per 100,000 population for collisions involving an older driver (aged 65+) ranked fourth among the comparison cities.

Figure 58. NHTSA CDR per 100,000 population – Collisions Involving an Older Driver (Aged 65+)

City	2021 Fatalities	2021 Population Age 65+	CDR 2021
San Diego	15	183,786	**8.16**
Portland	6	86,318	**6.95**
Chicago	23	350,443	**6.56**
Los Angeles	**32**	**502,430**	**6.37**
San Jose	7	133,679	**5.24**
Seattle	4	89,463	**4.47**
Boston	3	79,459	**3.78**
San Francisco	5	137,953	**3.62**
New York	25	1,318,204	**1.90**

2021 Population from 2021 5-year ACS estimates
Administration (NHTSA) Motor Vehicle Crash Data Querying and Reporting: https://cdan.dot.gov/query
Note: Collisions involving an older driver include collisions where at least one driver was 65+ and a fatality occurred.

Note: The 2021 Collision Death Rate was calculated using the National Highway Traffic Safety Administration's (NHTSA) Fatality Analysis Reporting System (FARS). This is a national dataset, which is different from the RoadsafeGIS data used for the majority of the analysis, in order to make comparisons across cities.

- The City of Los Angeles' pedestrian death rate per 100,000 population is the highest among the cities compared.

Figure 59. NHTSA Pedestrian Death Rate (PDR) per 100,000 population – Pedestrians Killed in Fatal Crashes

City	Total Fatalities	Population	per 100k	PDR 2021
Los Angeles	**142**	**3,902,440**	**100,000**	**3.64**
Portland	23	647,176	100,000	**3.55**
San Diego	47	1,385,398	100,000	**3.39**
Seattle	22	726,054	100,000	**3.03**
San Jose	28	1,013,337	100,000	**2.76**
Chicago	67	2,696,561	100,000	**2.48**
San Francisco	15	865,933	100,000	**1.73**
Boston	9	672,814	100,000	**1.34**
New York	115	8,736,047	100,000	**1.32**

2021 Population from 2021 5-year ACS estimates
Administration (NHTSA) Motor Vehicle Crash Data Querying and Reporting: https://cdan.dot.gov/query

Note: The 2021 Collision Death Rate was calculated using the National Highway Traffic Safety Administration's (NHTSA) Fatality Analysis Reporting System (FARS). This is a national dataset, which is different from the RoadsafeGIS data used for the majority of the analysis, in order to make comparisons across cities.

- City of Los Angeles' pedestrian death rate for ages 65 and older per 100,000 population ranks third among the cities compared.

Figure 60. NHTSA PDR per 100,000 population – Pedestrians 65+ Killed in Fatal Crashes

City	Total Fatalities	Population	per 100k	PDR 2021
Seattle	6	89,463	100,000	**6.71**
Chicago	22	350,443	100,000	**6.28**
Los Angeles	**31**	**502,430**	**100,000**	**6.17**
Portland	4	86,318	100,000	**4.63**
San Francisco	6	137,953	100,000	**4.35**
Boston	3	79,459	100,000	**3.78**
San Jose	5	133,679	100,000	**3.74**
San Diego	6	183,786	100,000	**3.26**
New York	39	1,318,204	100,000	**2.96**

2021 Population from 2021 5-year ACS estimates
Administration (NHTSA) Motor Vehicle Crash Data Querying and Reporting: https://cdan.dot.gov/query

Note: The 2021 Collision Death Rate was calculated using the National Highway Traffic Safety Administration's (NHTSA) Fatality Analysis Reporting System (FARS). This is a national dataset, which is different from the RoadsafeGIS data used for the majority of the analysis, in order to make comparisons across cities.

- City of Los Angeles' pedalcyclist death rate per 100,000 population is among the lowest for the cities compared.

Figure 61. NHTSA Pedalcyclist Death Rate (PCDR) per 100,000 population – Pedalcyclists Killed in Fatal Crashes

City	Total Fatalities	Population	per 100k	PCDR 2021
San Jose	5	1,013,337	100,000	**0.49**
Seattle	3	726,054	100,000	**0.41**
Chicago	11	2,696,561	100,000	**0.41**
San Diego	5	1,385,398	100,000	**0.36**
Los Angeles	**12**	**3,902,440**	**100,000**	**0.31**
New York	8	8,736,047	100,000	**0.09**
Boston	Not available	672,814	100,000	**NA**
Portland	Not available	647,176	100,000	**NA**
San Francisco	Not Available	865,933	100,000	**NA**

2021 Population from 2021 5-year ACS estimates
Administration (NHTSA) Motor Vehicle Crash Data Querying and Reporting: https://cdan.dot.gov/query

Note: Pedalcyclists are bicyclists and other cyclists including riders of two- wheel, nonmotorized vehicles, tricycles, and unicycles powered solely by pedals.

Note: The 2021 Collision Death Rate was calculated using the National Highway Traffic Safety Administration's (NHTSA) Fatality Analysis Reporting System (FARS). This is a national dataset, which is different from the RoadsafeGIS data used for the majority of the analysis, in order to make comparisons across cities.

Additional Requests:

- Safety Belts: 78% of vehicle driver or passenger parties involved in collisions were using a safety belt at the time of the collision.
- Red Light Running: 8% of parties in KSI collisions ran a red light, as coded in the violation detail of the collision report. Though the information may be an underestimate given that not all red-light running is recorded as such. An additional 9% failed to yield at a crosswalk.

Appendix D

SYSTEMIC ANALYSIS SUMMARY

FEHR PEERS

City of Los Angeles Department of Transportation (LADOT) Vision Zero

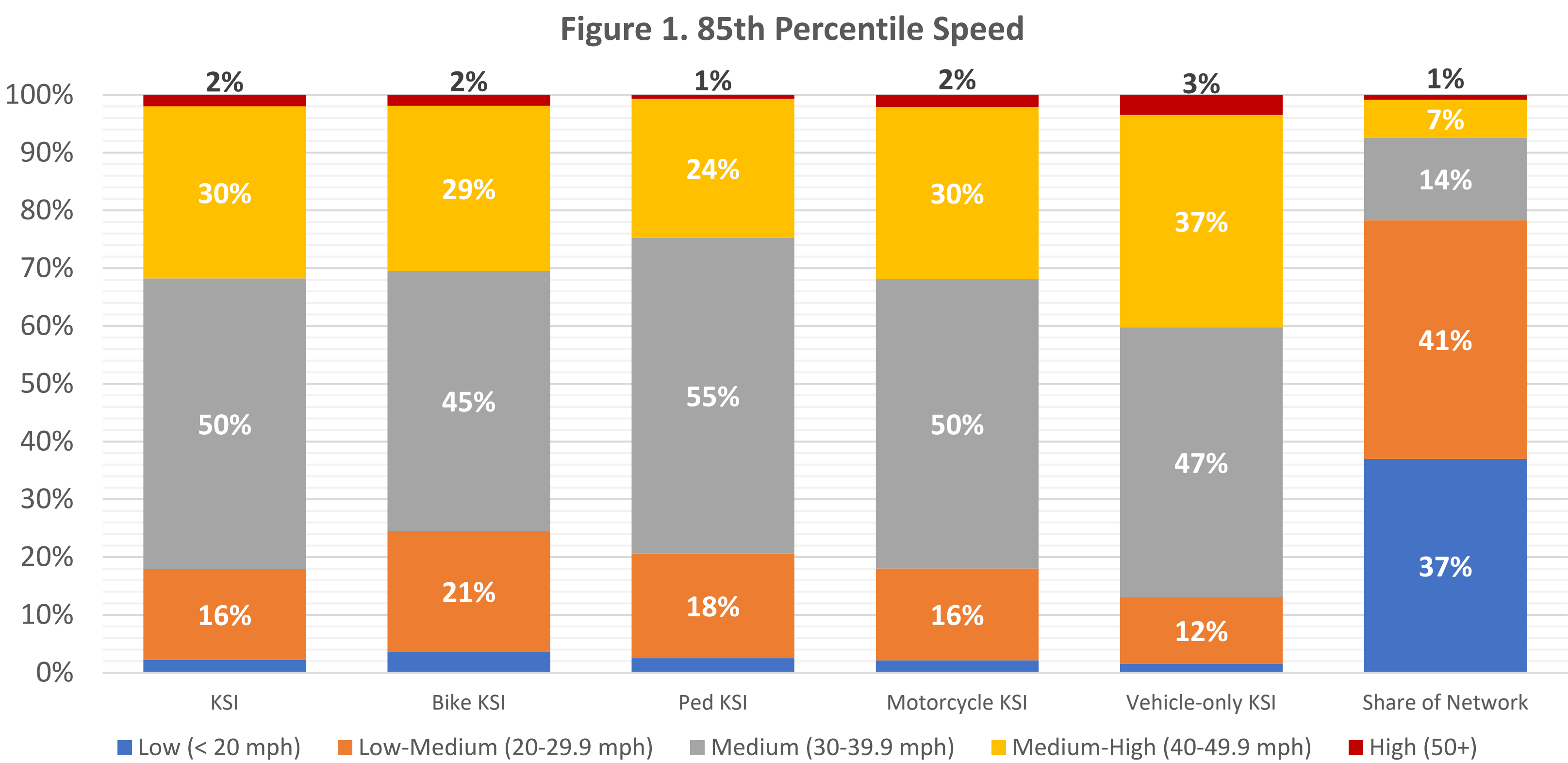
Systemic Analysis Summary

This summary is a supplementary document to the Collision Landscape Summary. While the Collisions Landscape Summary examines the trends seen within the collision records themselves, the Systemic Analysis Summary takes this work one step further – it pairs the collision data with roadway or other contextual data, and highlights the trends seen in this pairing. The Systemic Analysis parses out the roadway characteristics of collisions by location (i.e., 85th percentile speed, weekday ADT, signalized-unsignalized intersections, classification, etc.). Furthermore, it relates these roadway geographical characteristics to the behavioral and temporal collision trends identified in the landscape summary.

Notes: Numbers may not add to 100% due to rounding. Mode-specific KSI will not sum to KSI total because a small number of collisions involve multiple modes (i.e. bicyclist, pedestrian, and/or motorcycle).

85th Percentile Speed – All Collisions

- KSI collisions occur disproportionately along roadways with observed 85th percentile speeds between 30 and 50 mph.
- Roadways with 30-39.9 mph 85th percentile speeds make up 14% of the roadway network, but represent 45-55% of KSI collisions across all modes. And, 40-49.9 mph roadways make up 7% of the roadway network, but represent between 24-37% of KSI collisions across all modes.

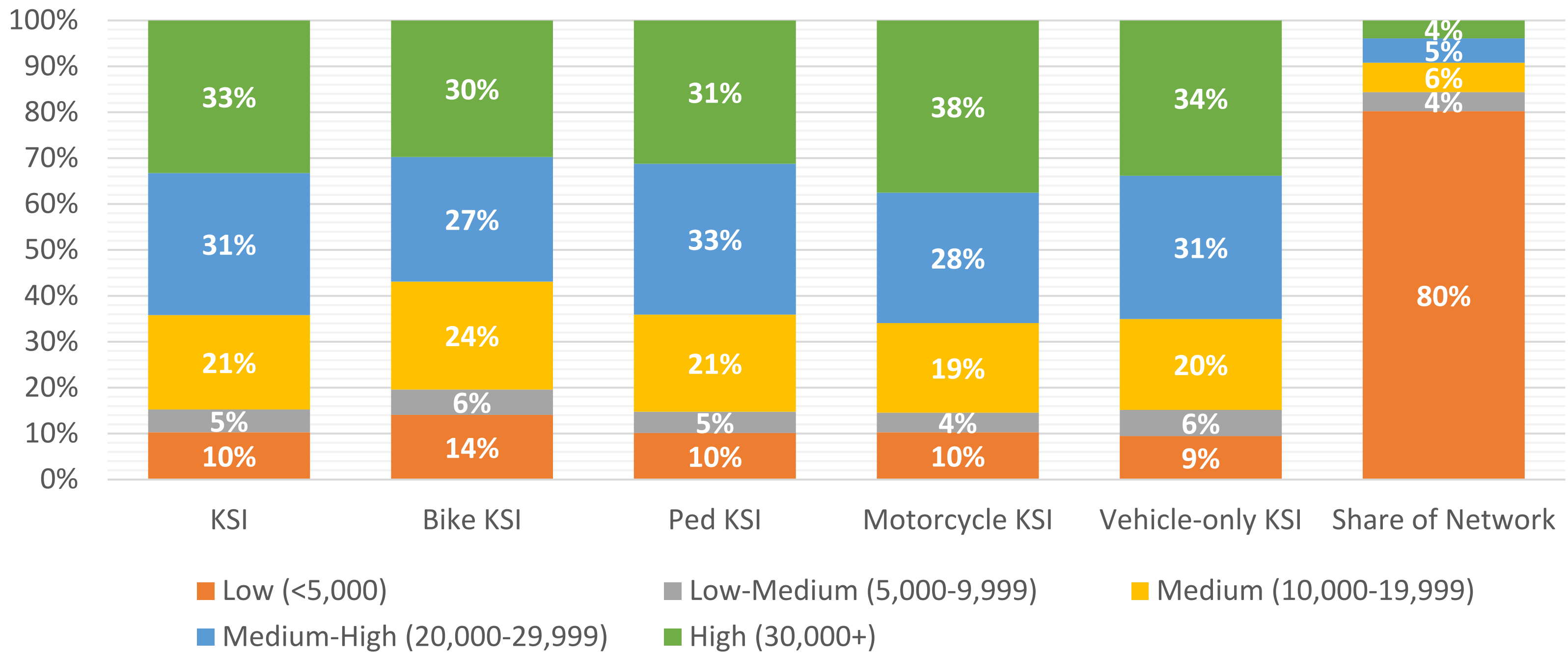


Note: Data labels for values less than 5 percent were removed, except for High (50+) labels. 85th percentile speed data was sourced from Wejo connected vehicle data.

Weekday Average Daily Traffic (ADT)

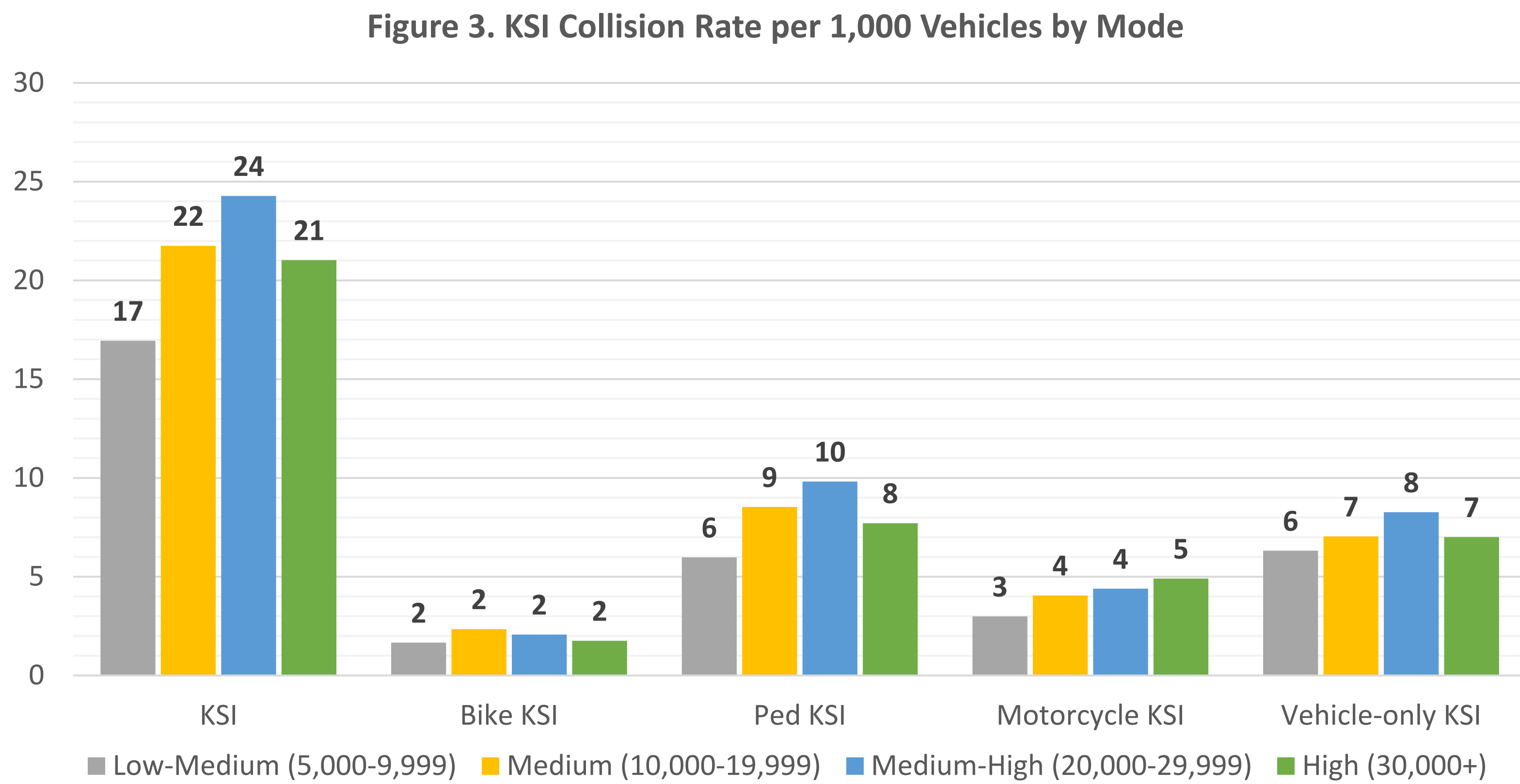
- KSI collisions occur disproportionately on higher volume streets relative to their share of the roadway network. Roadways with 10k+ ADT comprise approximately 15% of the roadway network; however, they represent approximately 80% of KSI collisions across all modes.
- Bike KSI collisions have a larger proportion of collisions occurring on streets with 10k-20k ADT relative to other KSI collisions – 24% compared to the 20% average across other modes.
- Motorcycle collisions have a larger proportion of collisions occurring on streets with 30k+ ADT relative to other KSI collisions – 38% compared to the 32% average across other modes.
- Higher ADT streets (10k+) also see a higher concentration of collisions happening at night, compared with lower ADT streets.

Figure 2. Weekday Average Daily Traffic (ADT)



Note: It is assumed that all roadways classified as "local" have an ADT less than 5,000.

- Similar to Figure 2, roadways with an ADT of at least 10,000 are generally subject to a higher rate of KSI collisions relative to all other ADT levels irrespective of transportation mode.



Note: ADT was not collected for local roadways, therefore the Low ADT bin does not reflect accurate volumes to calculate a collision rate.

- Table 1 shows a detailed breakdown of the KSI collision rate per 1,000 vehicles by mode, and it includes ADT ranges for each ADT bin.

Table 1. KSI Collision Rate per 1,000 Vehicles by Mode

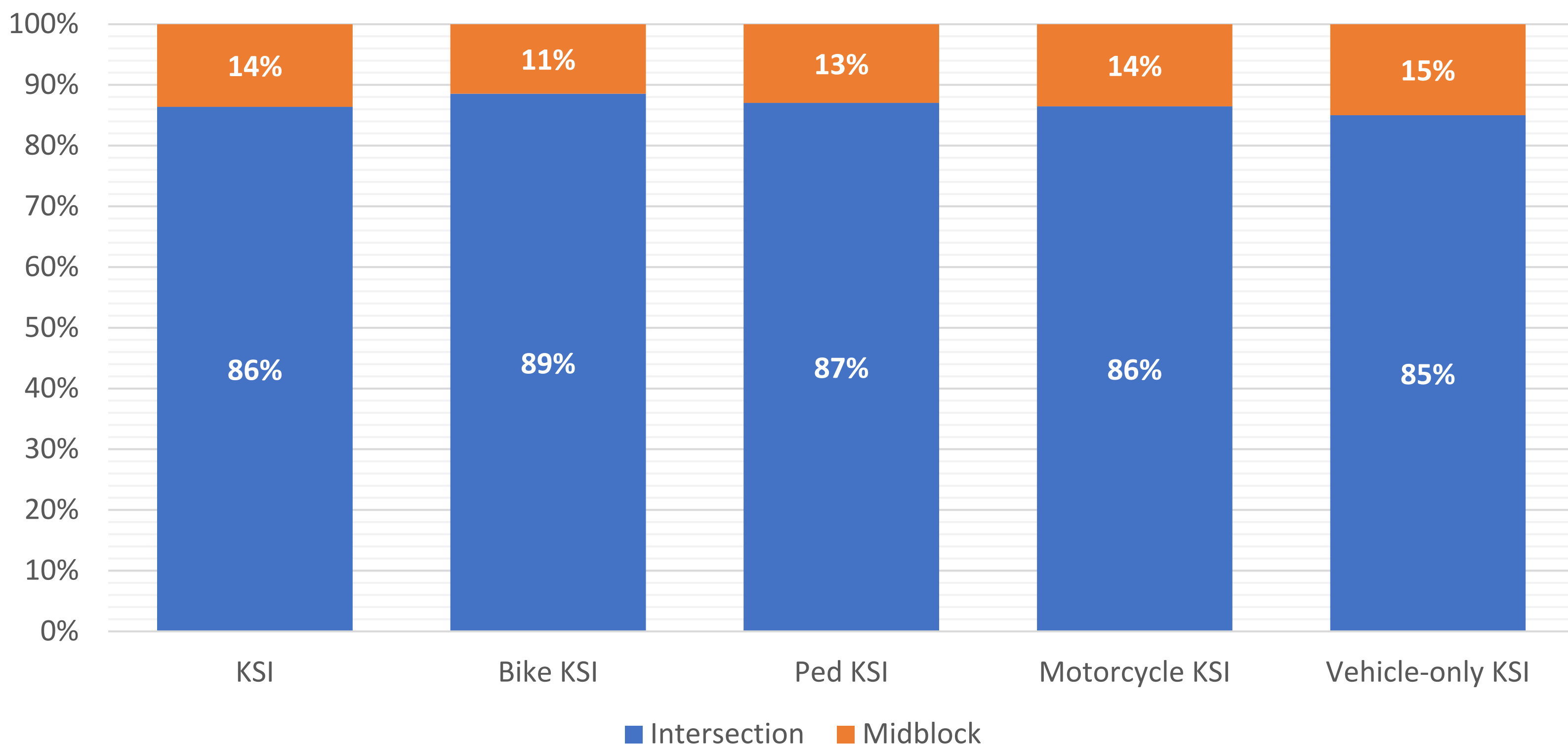
ADT	ADT Range and Weighted Average	KSI	Bike KSI	Ped KSI	Motorcycle KSI	Vehicle-only KSI
Low (<5,000)	*KSI Collisions*	*768*	*97*	*289*	*153*	*235*
	Midpoint (2,500)	NA	NA	NA	NA	NA
	Midpoint (2,500)	NA	NA	NA	NA	NA
Low-Medium (5,000-9,999)	*KSI Collisions*	*370*	*38*	*131*	*64*	*141*
	Weighted Average (7,270)	51	5	18	9	19
	Weighted Average per 100 miles	**17**	**2**	**6**	**3**	**6**
Medium (10,000-19,999)	*KSI Collisions*	*1,538*	*162*	*603*	*290*	*493*
	Weighted Average (15,035)	102	11	40	19	33
	Weighted Average per 100 miles	**22**	**2**	**9**	**4**	**7**
Medium-High (20,000-29,999)	*KSI Collisions*	*2,313*	*187*	*936*	*423*	*775*
	Weighted Average (24,520)	94	8	38	17	32
	Weighted Average per 100 miles	**24**	**2**	**10**	**4**	**8**
High (30,000-140,912)	*KSI Collisions*	*2,484*	*205*	*889*	*559*	*841*
	Weighted Average (41,071)	60	5	22	14	20
	Weighted Average per 100 miles	**21**	**2**	**8**	**5**	**7**

Note: The ADT weighted average is based off weighting roadway segments by their length. The formula to calculate KSI collision rate per 1,000 vehicles is (Number of Collisions/ADT)*1,000. The final weighted average is normalized per 100 roadway miles for the respective ADT bin.
Note: ADT was not collected for local roadways, therefore the Low ADT bin does not reflect accurate volumes to calculate a collision rate.

Intersections and Midblock

- KSI collisions across modes occur more than 85% of the time at intersections, relative to midblock.
- Bike KSI collisions occurred 89% of the time, relative to midblock, and the average for other modes was 86%.

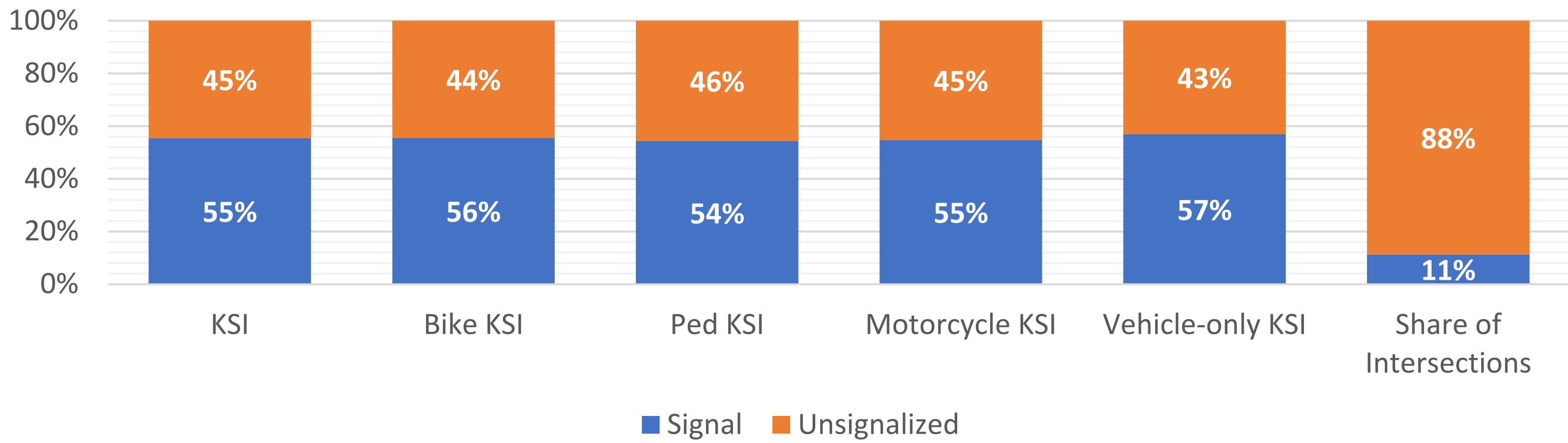
Figure 4. Intersections and Midblocks



Intersection Control

- Signalized intersections represent 11% of intersections, but account for more than 50% of KSI intersection collisions across all modes. This trend may be related to the fact that signalized intersections often times experience greater traffic volumes.
- The majority of collision characteristics analyzed for KSI collisions at intersections occur more frequently at signalized intersections than unsignalized, with some exceptions:
    - Unsafe Speed and Wrong Side of the Road Violations
    - Sideswipes
    - Pedestrians hit while crossing outside of a crosswalk
- When examining signal phasing, the analysis uncovered that KSI collisions occurring at signals with fully protected left turn phasing are more likely to occur during dark conditions, when compared with the KSI collisions that occur at all other intersection types (65% vs. 51%, respectively). Collisions that occur at minor unsignalized intersections showed a different temporal trend, with 58% of KSI collisions happening during the day compared with 45% at all other intersection types.

Figure 5. Intersection Control

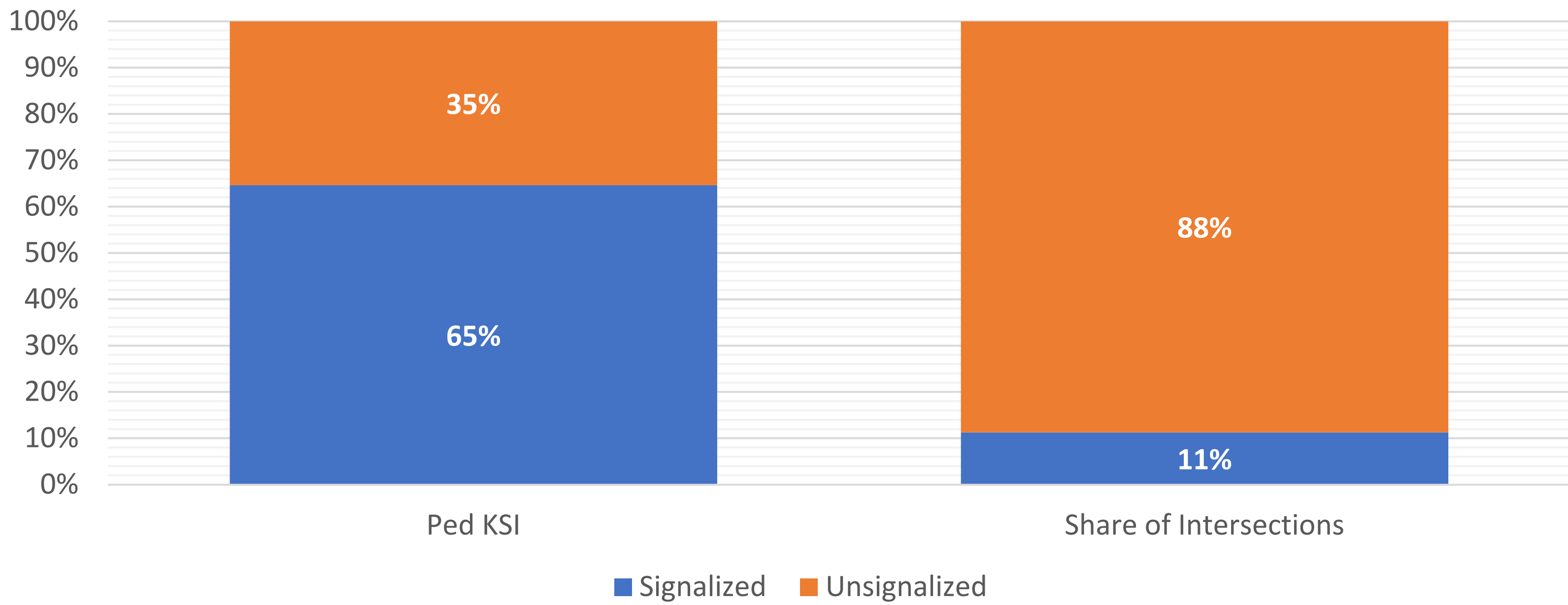


Note: Intersection collisions are defined as being within 250' of a Major intersection (one leg of intersection is Boulevard or Avenue) and 75' of a Minor intersection (all other intersections). Midblock collisions are defined as being outside of the buffers by intersection type.
Note: All other intersection types include: signalized partially protected lefts, signalized other lefts, unsignalized major, unsignalized minor, and midblock.

Pedestrian KSI when Crossing in a Crosswalk at an Intersection

- Pedestrians hit by drivers while in a crosswalk at an intersection are most common at signals. Though signalized intersections represent 11% of the share of all intersections, 65% of pedestrian KSI collisions occur at signalized intersections where the pedestrian was crossing in a crosswalk.
- Over a third of pedestrians crossing at marked intersection crosswalks are hit at unsignalized locations. Note that unsignalized intersections include locations controlled by a flashing beacon.
- The majority of KSI collisions involving pedestrians crossing outside of a marked crosswalk occur at unsignalized and midblock locations.

Figure 6. Pedestrian KSI When Crossing in a Crosswalk at an Intersection

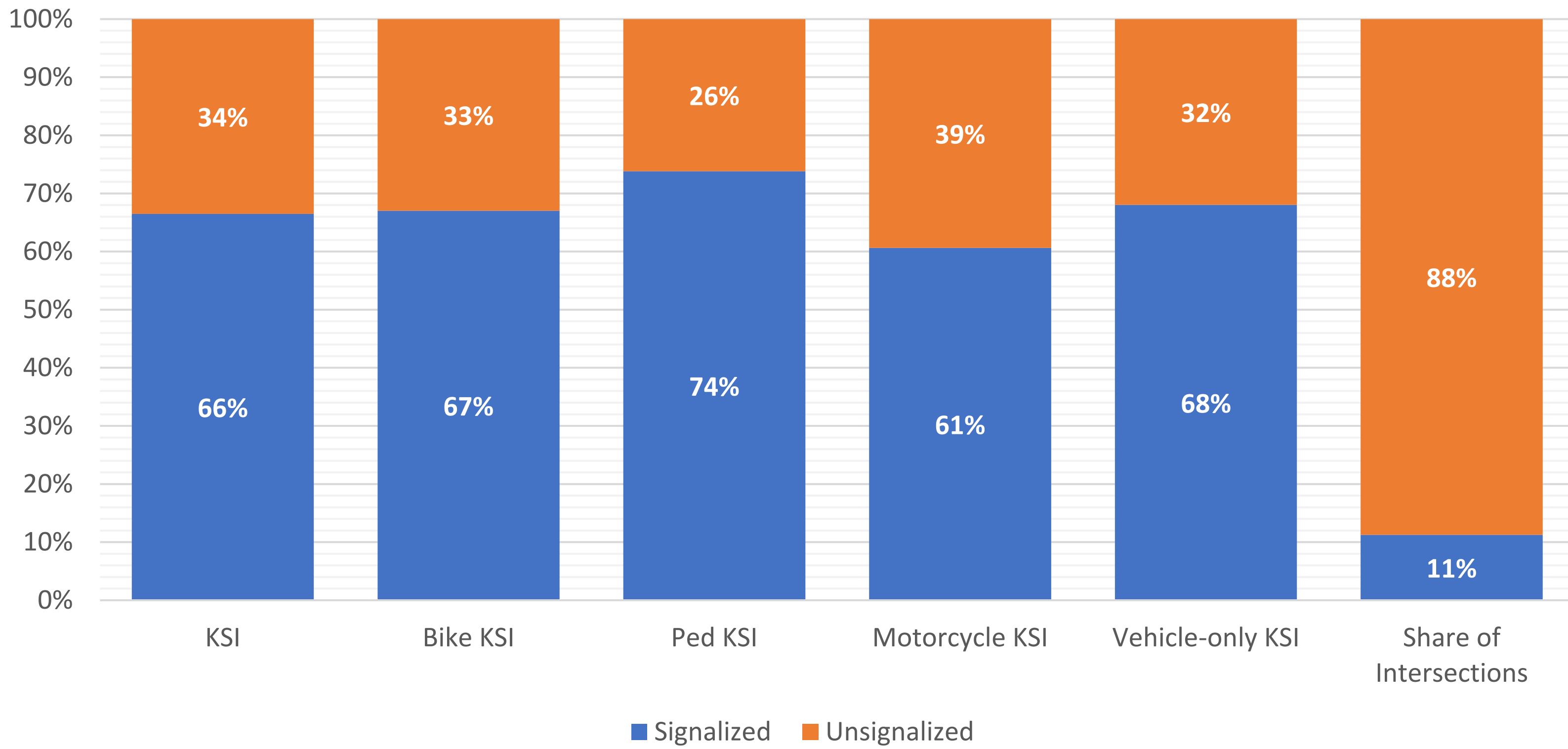


Note: There is uncertainty around whether reporting officers consistently classify unmarked legal crossings as crossing in a crosswalk or not. Crossing in a Crosswalk at an Intersection includes all intersection types, regardless of traffic control.

Driver Making a Left Turn at Intersection

- Among KSI collisions where the driver was making a left turn at an intersection, the majority occurred at signals. Though signalized intersections represent 11% of the share of all intersections, two-thirds of KSI collisions where the driver was making a left turn occur at signals. For pedestrian KSI collisions, that number increases to nearly three-fourths.
- This trend also holds true for right turns, though those KSI collisions are much less common.

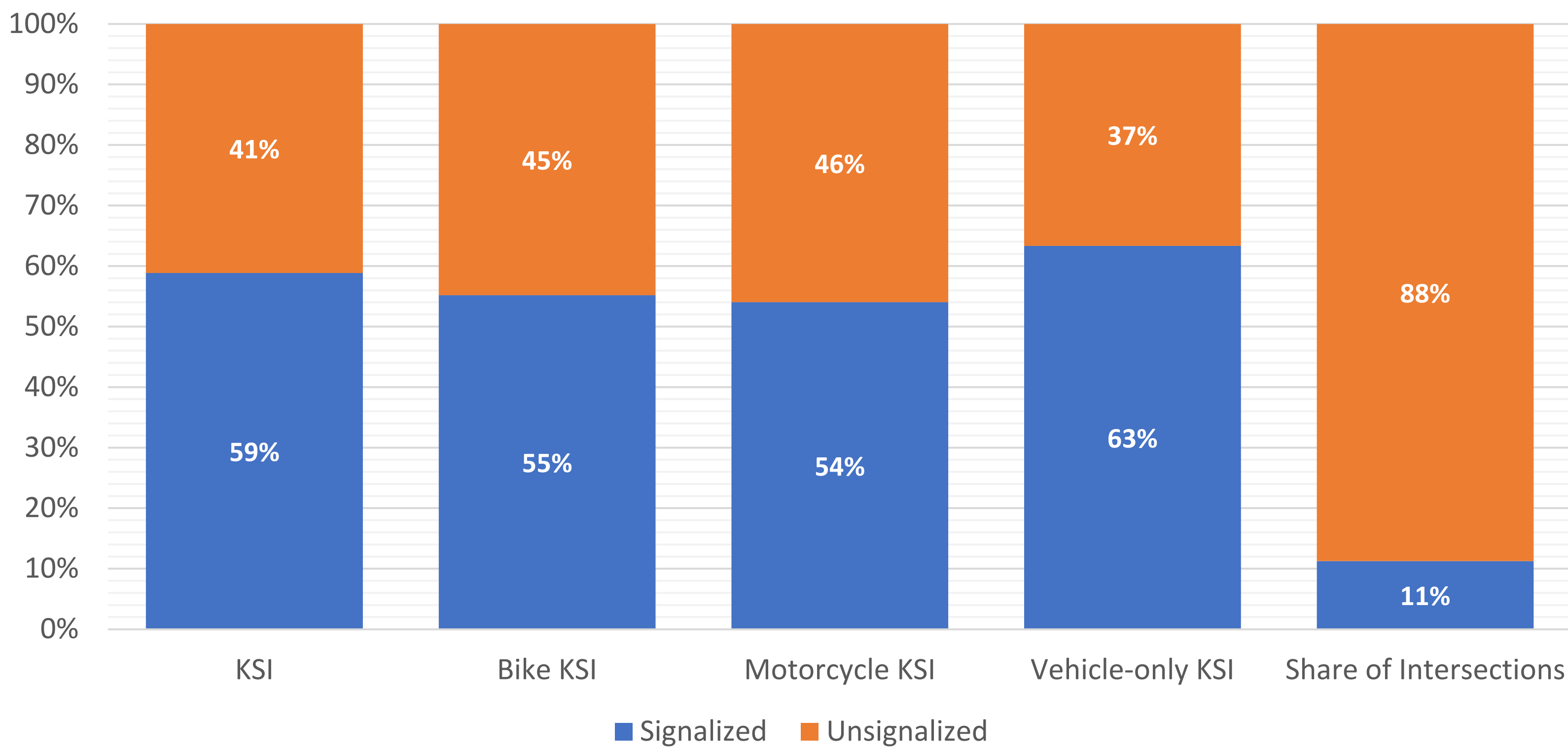
Figure 7. Driver Making a Left Turn



Broadside Collisions and Intersections

- Though signalized intersections represent 11% of all intersections, 59% of intersection-related broadside KSI collisions occur at signals.

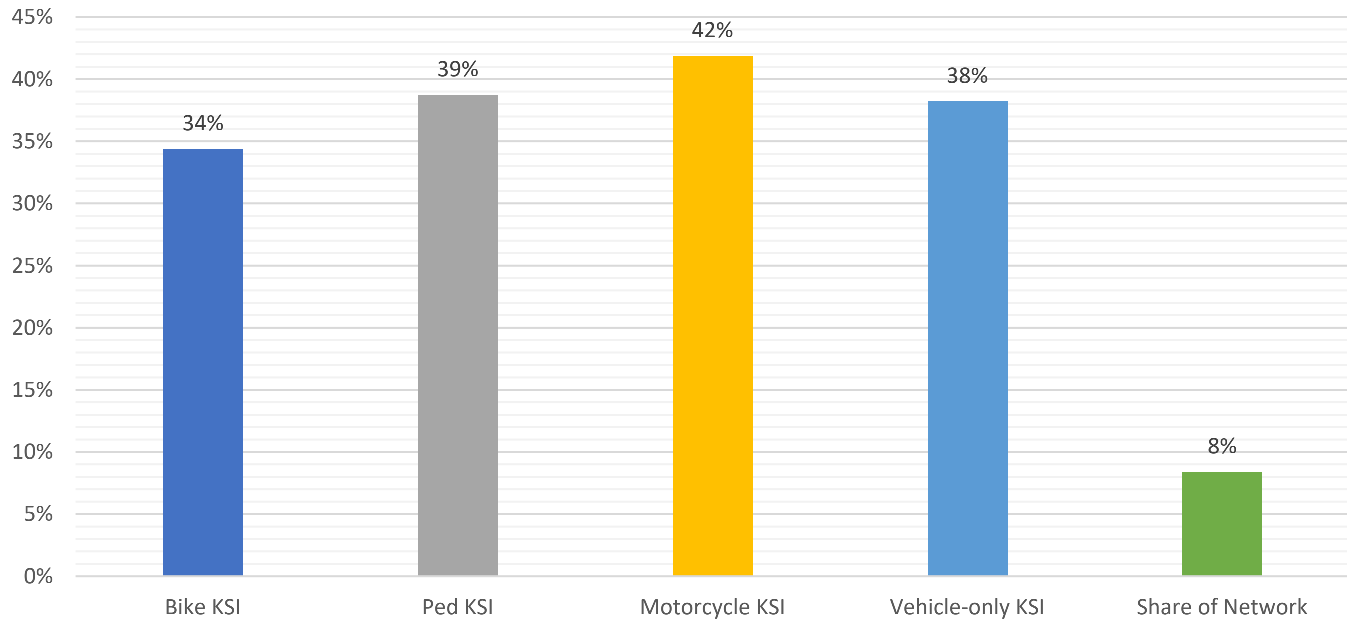
Figure 8. Broadside Collisions and Intersections



Truck Route

- Severe and fatal collisions occur disproportionately on truck routes. Truck routes account for 34-42% of KSI collisions, depending on the transportation mode, despite those streets only accounting for 8% of the network. This trend however may be related to the fact that truck routes are often on higher volume streets, which as indicated previously, account for the largest share of KSI collisions.

Figure 9. Truck Routes



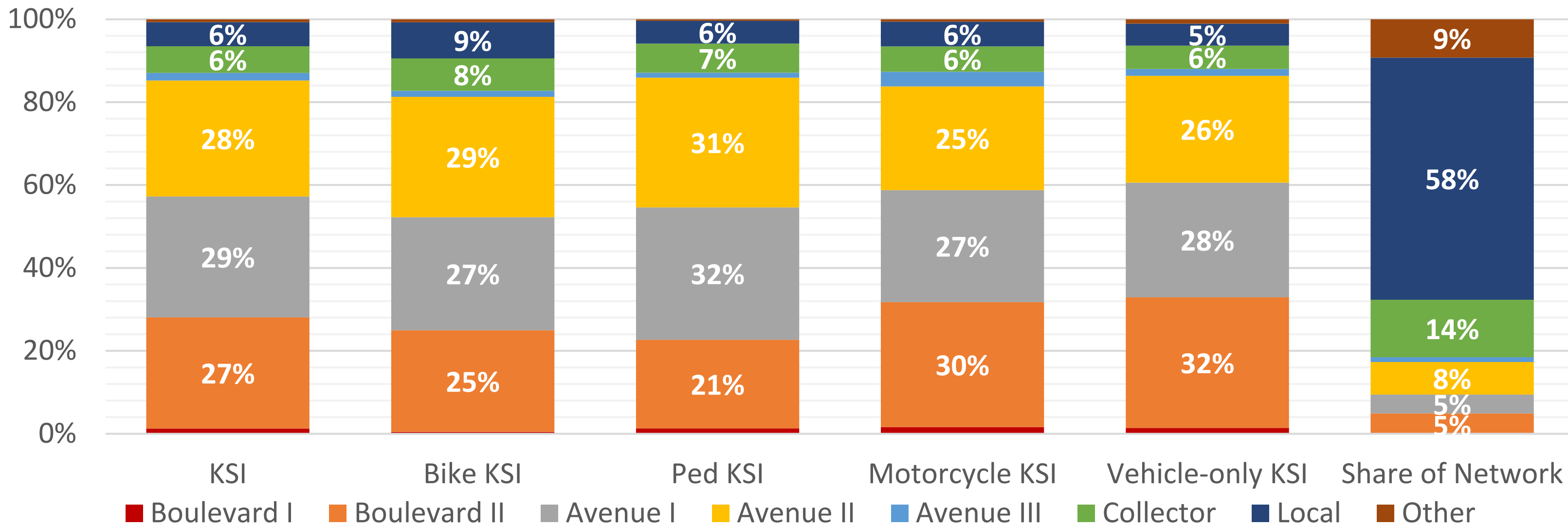
Note: Truck Routes include Loaded and Empty Haul Routes + Height and Weight Limit Routes. Here are the sources services on the LA GeoHub:

- Truck Route – Height Limit: Established routes for trucks with cargo that extends above the normal clearance allowed for overpasses, freeway bridges and overhead obstacles along the city streets
- Truck Route – Weight Limit: Established routes for trucks with cargo that is considered too heavy for many of the streets within the city
- Empty Truck Haul Routes: Haul routes are approved routes for trucks moving materials for construction activities on private property
- Loaded Truck Haul Routes: Haul routes are approved routes for trucks moving materials for construction activities on private property

Roadway Classification

- Wider streets – Boulevard II (≈80ft, 2-3 lanes in each direction), Avenue I (≈70 ft, 1-2 lanes in each direction), and Avenue II (≈56ft, 1-2 lanes in each direction) – represent 18% of the roadway network, but account for more than 80% of KSI collisions across all modes.
- Narrower streets – Collector (≈40ft, 1 lane in each direction) and Local (36ft, 1 lane in each direction) – make up nearly 75% of the network, but represent 11-17% of KSI collisions across all modes.
- Certain KSI collision characteristics are concentrated on different classifications – among Citywide KSI collisions, the highest share of left turn and broadside collisions occur on Boulevard IIs (35% and 34%, respectively); the highest share of Pedestrian Violation collisions occur on Avenue IIs (37%).
- Among KSI collisions occurring on local streets, 57% are during the day (compared to 40% for Boulevard I).

Figure 10. Roadway Classification



Note: Data labels for values less than 5%were removed from the chart.

Note: Street type characteristics (i.e., width and number of lanes) described above are representative of a typical configuration – some streets may differ slightly from these definitions.

Note: The "Other" category in the Share of Network bar includes industrial collectors, local street – limited, industrial local, hillside collector, mountain collector, scenic arterial mountain, scenic parkway, private, outside city, unidentified, other, and NULL streets.

- Table 2 shows the share of all injury collisions by ADT per roadway classification. The ADT share of classification miles row shows the share of ADT by total roadway classification mileage. The difference row shows the percentage difference between the share of collisions and the share of classification miles (e.g., Boulevard I, share of collisions on 30K+ ADT – share of classification miles = 3.6%). Positive differences indicate there is a disproportionate percent of collisions along roadways of a specific ADT relative to the ADT share of the roadway classification. Figures 11-13 display the same information in Table 2.
- Collisions tend to occur disproportionately along roadway segments where ADT levels are highest relative to ADT share of the roadway network. For example, 63% of collisions on Boulevard II roadways occur where ADT is greater than 30,000; however, only 42% of Boulevard II roadways have an ADT greater than 30,000, demonstrating a 21.3% difference.

able 2. Collisions by ADT Shares per Roadway Classifications + ADT Share of Roadway Classifications

Metric	Weekday ADT	Mobility Plan Classifications							
		Boulevard I	Boulevard II	Avenue I	Avenue II	Avenue III	Collector	Local	Other
Share of Collisions	Unknown	NA	NA	NA	NA	NA	NA	NA	NA
	Low (<5k)	NA	NA	NA	NA	NA	NA	NA	NA
	Low-Medium (5k-9.9k)	8%	1%	2%	6%	18%	51%	19%	40%
	Medium (10k-19.9k)	9%	9%	17%	33%	30%	40%	68%	50%
	Medium-High (20k-29.9k)	25%	27%	36%	40%	37%	9%	14%	10%
	High (30k+)	58%	63%	45%	21%	16%	0%	0%	0%
ADT Share of Classification Miles	Unknown	NA	NA	NA	NA	NA	NA	NA	NA
	Low (<5k)	NA	NA	NA	NA	NA	NA	NA	NA
	Low-Medium (5k-9.9k)	13%	6%	10%	17%	27%	11%	NA	3%
	Medium (10k-19.9k)	16%	19%	31%	39%	27%	4%	NA	3%
	Medium-High (20k-29.9k)	16%	31%	34%	25%	16%	1%	NA	1%
	High (30k+)	54%	42%	24%	9%	6%	0%	NA	0%
Difference	Unknown	NA	NA	NA	NA	NA	NA	NA	NA
	Low (<5k)	NA	NA	NA	NA	NA	NA	NA	NA
	Low-Medium (5k-9.9k)	-5.8%	-4.8%	-7.8%	-11.2%	-9.5%	**40.0%**	NA	**36.6%**
	Medium (10k-19.9k)	-6.3%	-9.9%	-13.6%	-5.7%	**2.3%**	**35.6%**	NA	**46.6%**
	Medium-High (20k-29.9k)	**8.7%**	-3.8%	**1.8%**	**14.1%**	**21.2%**	**8.2%**	NA	**9.6%**
	High (30k+)	**3.6%**	**21.3%**	**21.6%**	**12.6%**	**10.2%**	0.0%	NA	0.0%

Figure 11. Collision Shares by ADT per Roadway Classification

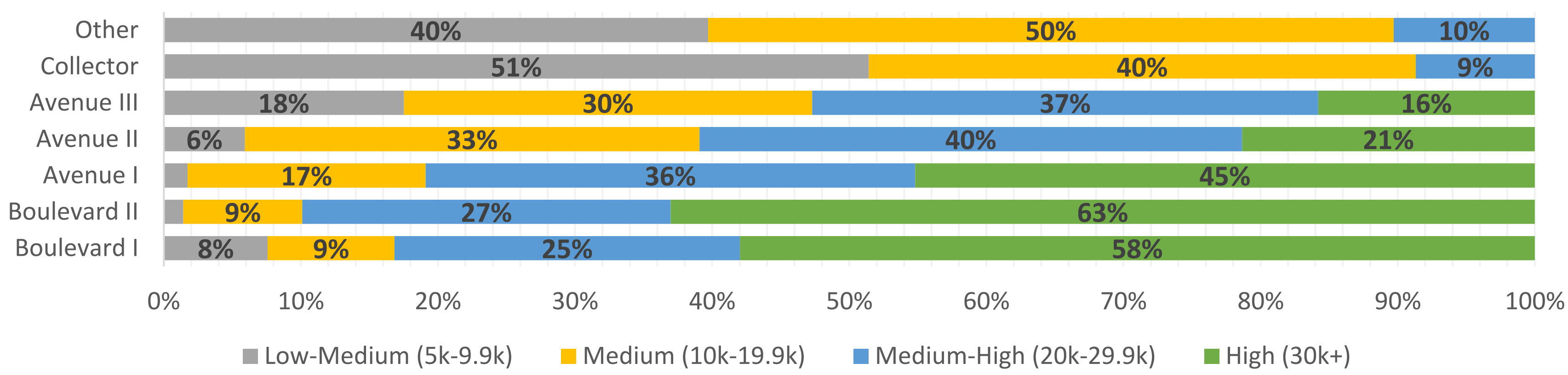
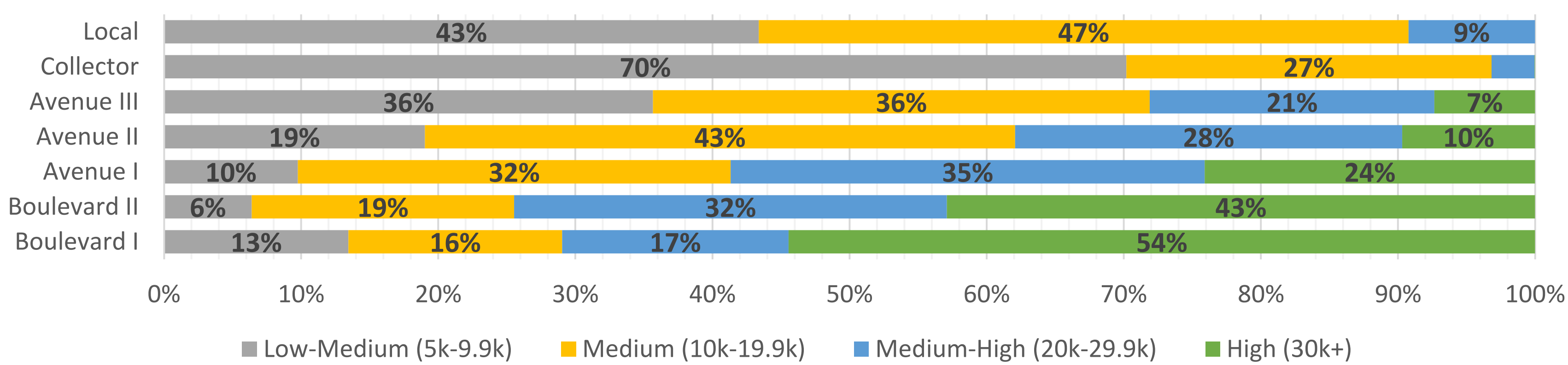
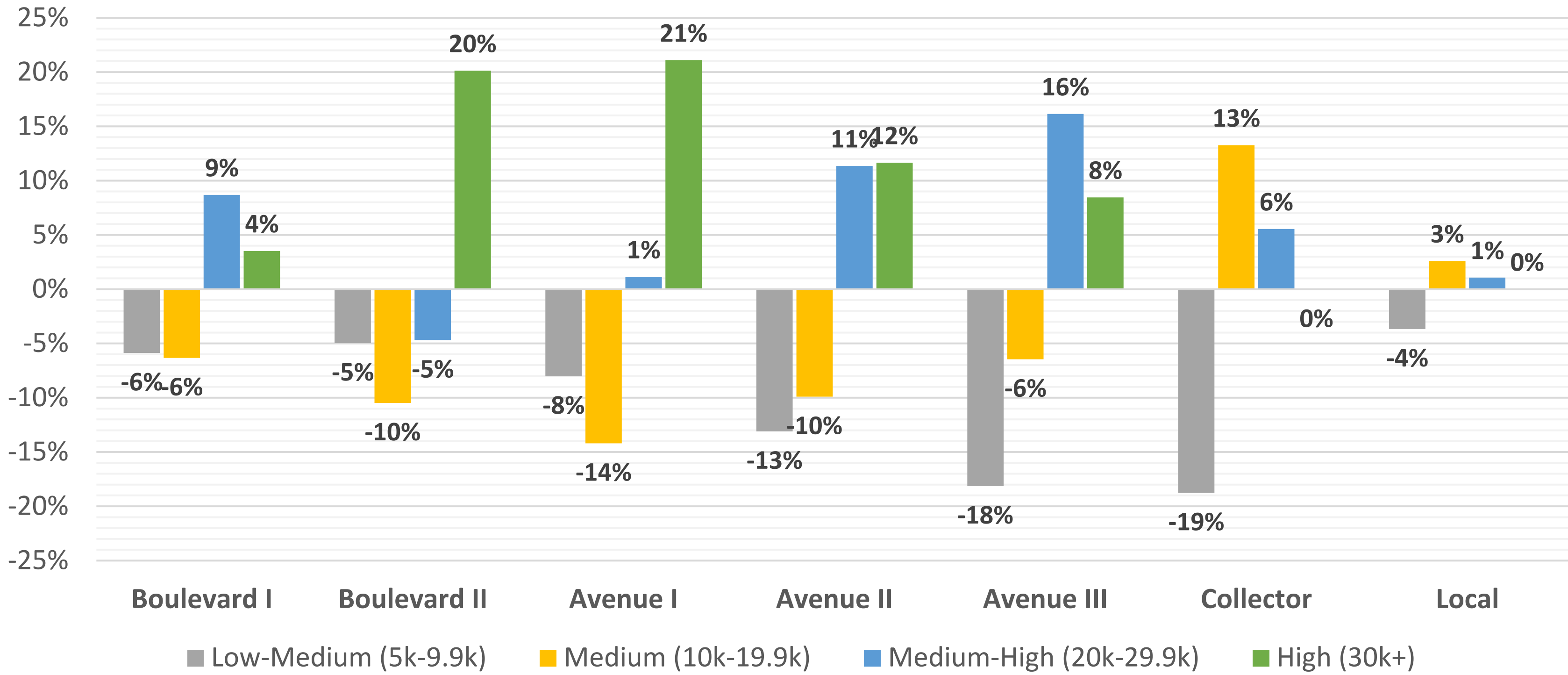


Figure 12. Share of ADT by Roadway Classification Mileage



Note: Data labels for values less than 5% were removed the chart.

Figure 13. Difference between the Share of Collisions by ADT per Roadway Classifications and the Share of ADT by Roadway Classification Mileage



Note: Values less than 1% were removed from Figure 13.

Note: ADT was not collected for local roadways, therefore the Low ADT bin does not reflect accurate volumes.

Council Districts

- CD 8 has the highest number of KSI collisions. While it represents 3% of the City land area, it accounts for 12% of all KSI collisions. CD experienced the highest number of pedestrian, motorcycle, and vehicle-only KSI collisions, compared to the other Council Districts.
- CD 9 accounts for the second largest share of KSI collisions. While it represents 3% of the City land area, it accounts for 10% of all collisions. CD 9 also experienced the highest number of bicycle KSI collisions in the City.

Figue 14. Council Districts by KSI Mode

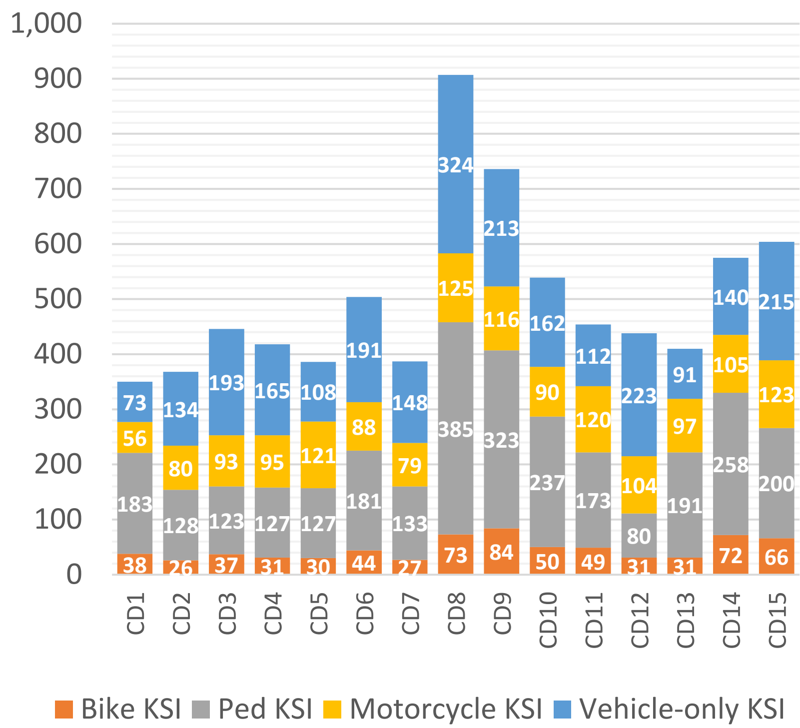
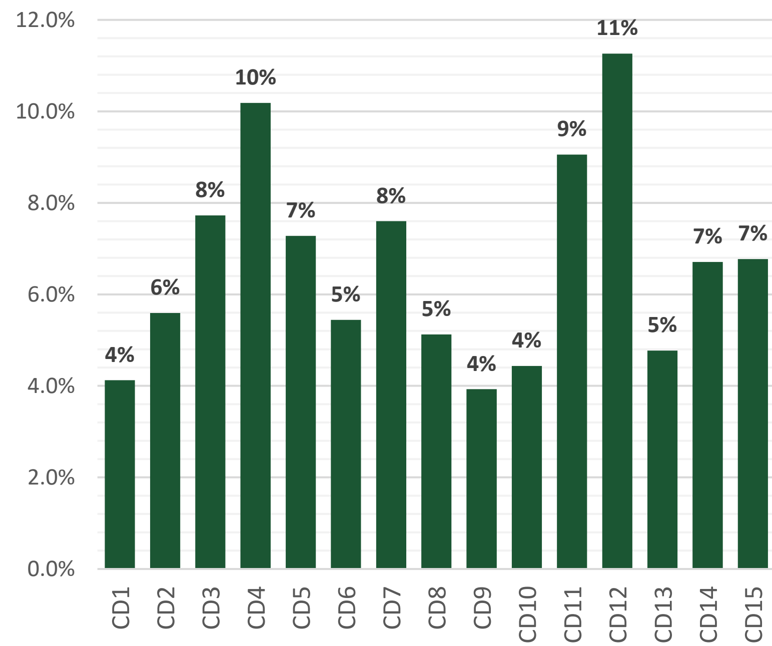


Figure 15. Council Districts Share of City Roadway Network



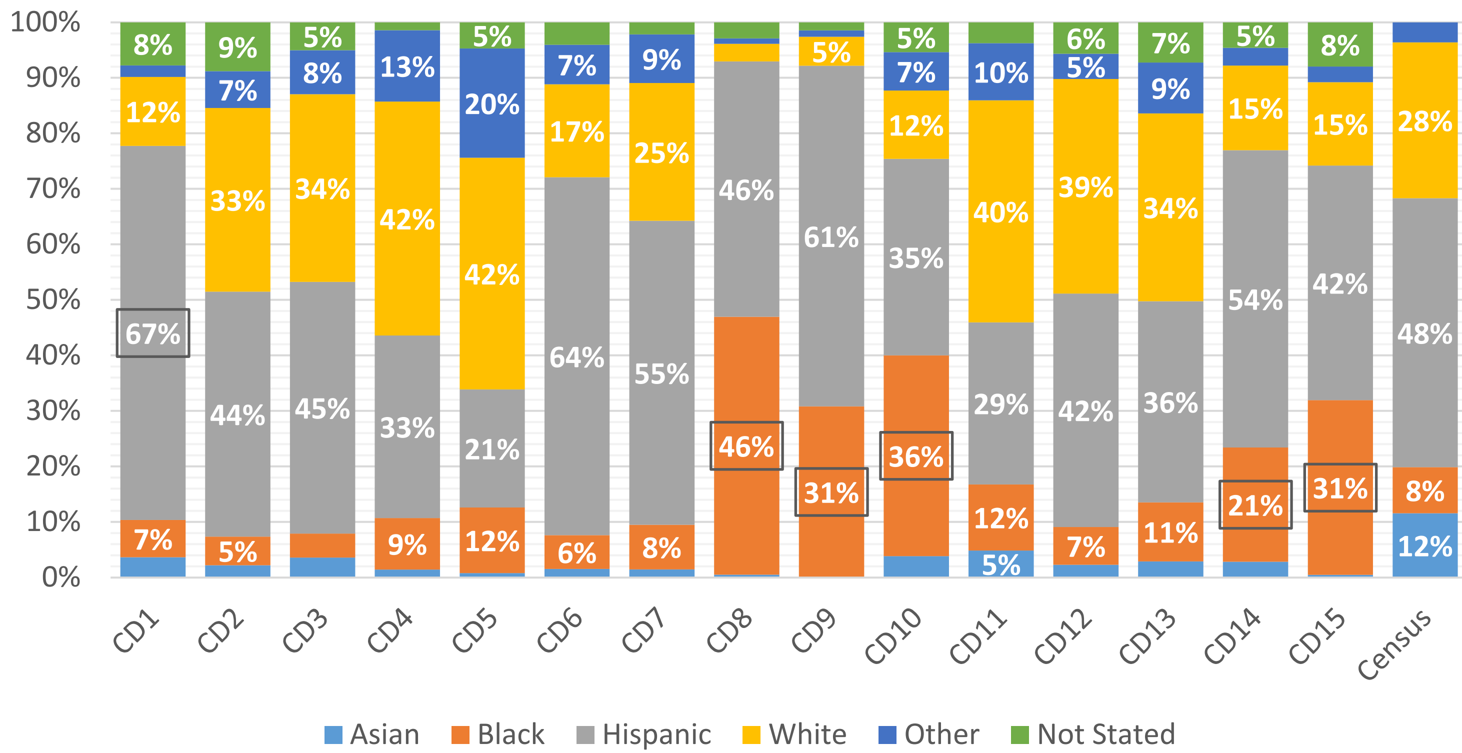
Note: Mode-specific KSI will not sum to KSI total because a small number of collisions involve multiple modes (i.e. bicyclist, pedestrian, and/or motorcycle).

Note: The share of the roadway network is displayed as a line for easier comparison of the KSI collision totals and each Council District's share of the City's roadway network. The line does not represent a continuous trend between Council Districts.

- KSI collision outcomes *and* trends are not evenly distributed throughout the City
- As CD 8 accounts for the largest share of KSI collisions, it also accounts for the largest share of the City's KSI collisions in the majority of the categories analyzed, such as:
    - Unsafe speed violations
    - Pedestrian violations
    - Weekend collisions
    - Overnight collisions (9 pm – 6 am)
    - Pedestrian crossing collisions (both in and outside of crosswalks)
- In examining the collision factors for which the distribution is most uneven throughout the City, CD 8 or 9 account for the largest share of collisions except for in one instance – CD 14 experiences the highest share of the City's KSI collisions where a pedestrian was walking in the road (not crossing). The KSI collision factors most disproportionately concentrated include:
    - Hit-and-run: 19% of the City's hit-and-run KSI collisions occur in CD 8; 15% occur in CD 9; 3% each occur in Districts 3, 5 and 12
    - Collisions involving victims age 17 and younger: 16% of the City's total occur in CD 9 and 15% in CD 8; 3% of the City's KSI collisions with victims age 17 and under each occur in Districts 1, 4, 5 and 13
- There are also some collision factor categories that are fairly evenly distributed across all Council Districts. These include:
    - Drivers making a right turn
    - Improper turning violations
    - Hit object collisions
- The analysis also uncovered specific concentrations of collisions within Council Districts, separate from Citywide trends, which highlight distinct patterns in Districts such as CD 1 and 12. These trends include:
    - 27% of KSI collisions in CD 1 involved a pedestrian violation, compared with 7% in CD 12 (19% Citywide)
    - 57% of KSI collisions in CD 12 occurred during daylight hours, compared with 37% in CD 1 and CD 8 (45% Citywide)
    - 31% of KSI collisions in CD 8 were hit-and-run, compared with 9% in CD 12 (20% Citywide)

- ◦ 38% of KSI collisions in CD 12 involved drivers making a left turn, compared with 18% in CD 1 (25% Citywide)
- This chart shows the share of race/ethnicity of pedestrian parties involved in KSI collisions in each Council District. In CD 1, two-thirds of pedestrians involved in KSI collisions are Hispanic - the highest share in the City.
- In Council Districts 8, 9, 10, 14 and 15, 20% or more of pedestrian parties involved in KSI collisions were Black – more than double the share of the Black population within Los Angeles (though this percentage varies district to district). In CD 8, 46% of pedestrian parties involved in KSI collisions were Black – the highest share in the City.

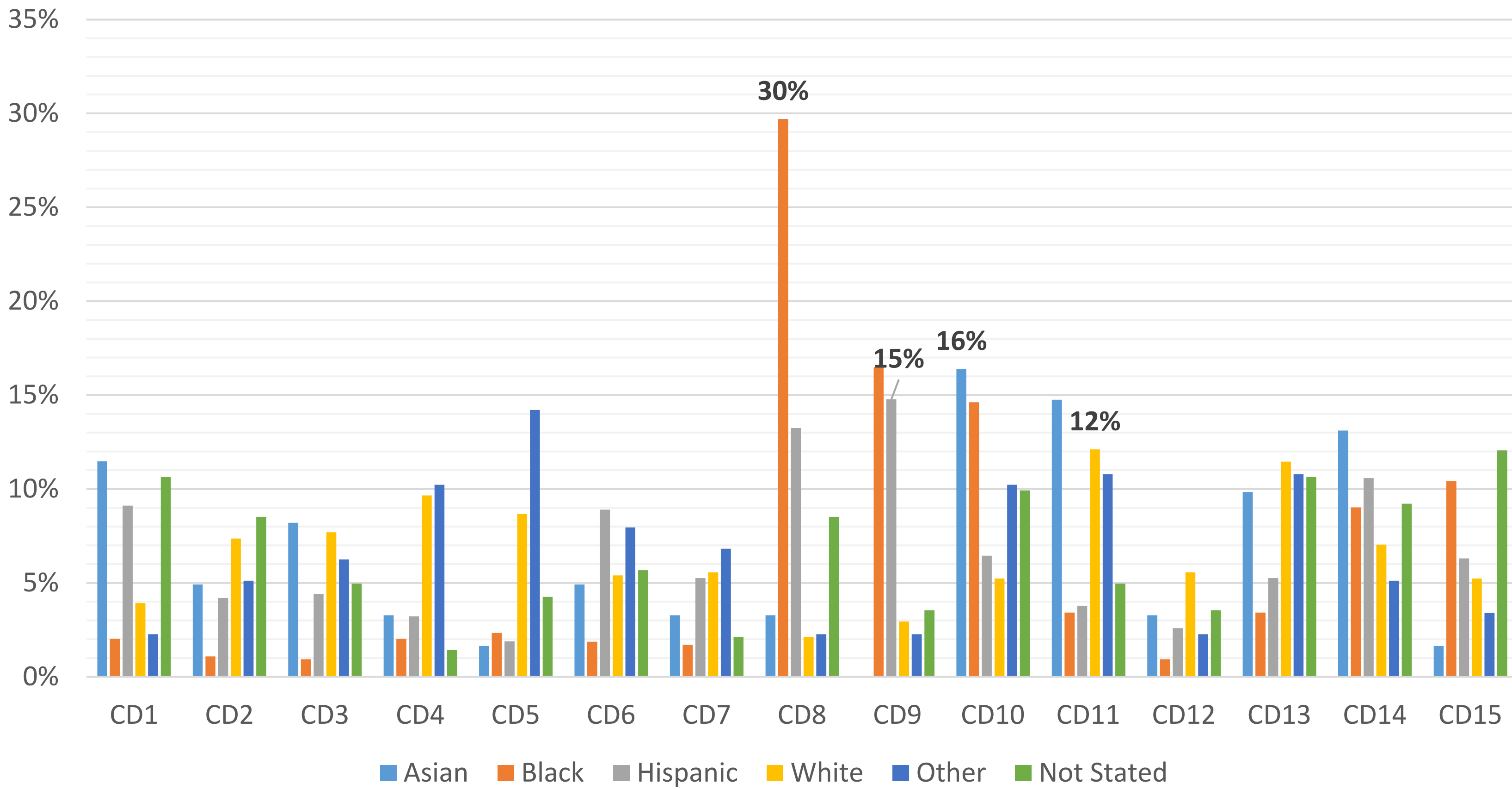
Figure 16. Pedestrians in KSI Collisions within Each District by Race/Ethnicity



Note: Data labels for values less than 5%were removed from the chart. Separately, the Census data represents race/ethnic composition for the City of Los Angeles, so, race/ethnicity composition may differ by district.

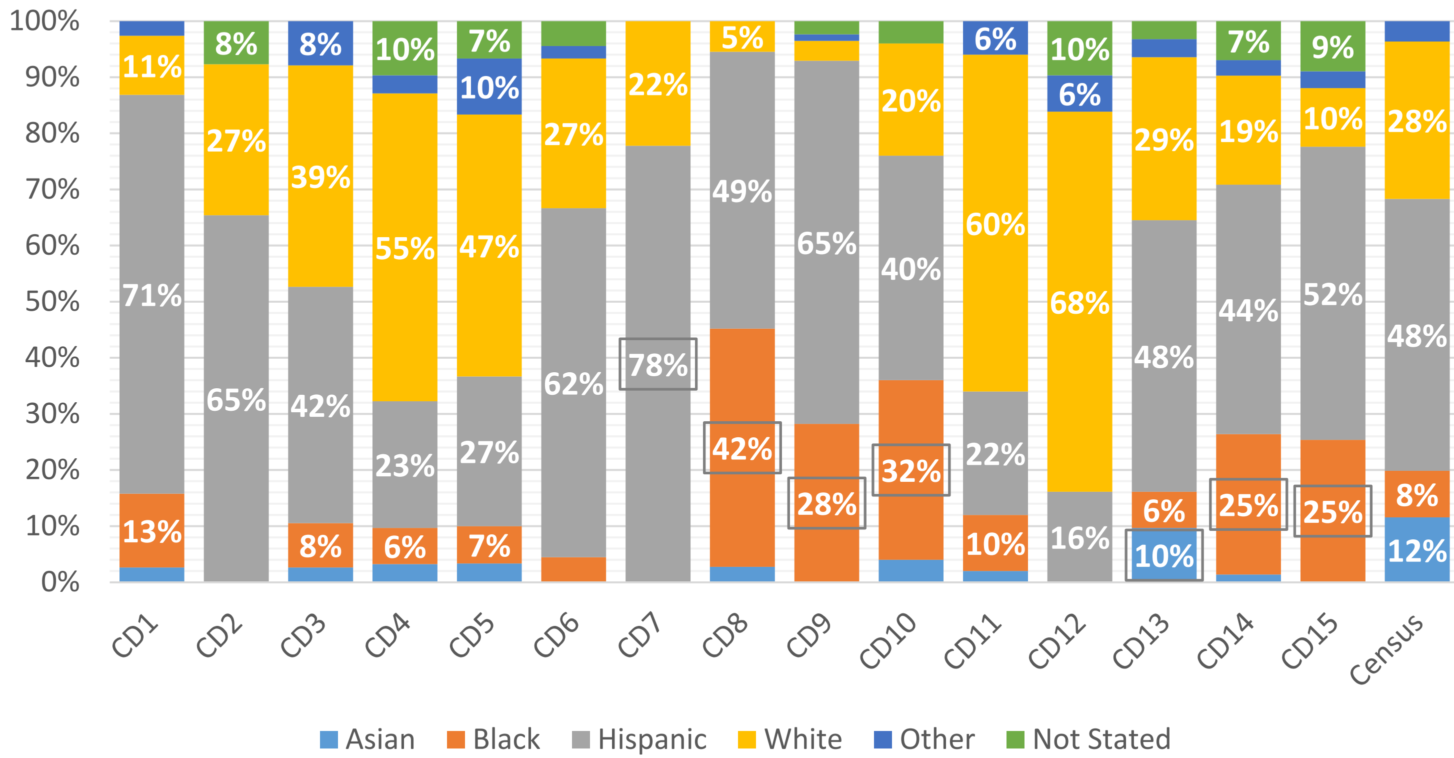
- Figure 17 is different from Figure 16 in that it presents the pedestrians involved in KSI collisions by race/ethnicity, as a share of pedestrians in KSI collisions across the entire City.
- For example, 30% of Black pedestrians involved in KSI collisions in Los Angeles were involved in a collision that occurred in CD 8 – the largest share in the City. 15% of Hispanic pedestrians involved in KSI collisions in Los Angeles were involved in a collision that occurred in CD 9 – the largest share in the City. 16% of Asian pedestrians involved in KSI collisions in Los Angeles were involved in a collision that occurred in CD 10 – the largest share in the City. 12% of white pedestrians involved in KSI collisions in Los Angeles were involved in a collision that occurred in CD 11 – the largest share in the City.

Figure 17. Share of Pedestrians in KSI Collisions by Race/Ethnicity Relative to City



- This chart shows the share of race/ethnicity of bicyclist parties involved in KSI collisions in each Council District. In CD 7, 78% of bicyclists involved in KSI collisions are Hispanic - the highest share in the City. In CD 13, 10% of pedestrians involved in KSI collisions are Asian – the highest share in the City.
- In Council Districts 8, 9, 10, 14 and 15, 20% or more of bicyclist parties involved in KSI collisions were Black – more than double the share of the Black population within Los Angeles (though this percentage varies district to district). In CD 8, 42% of bicyclist parties involved in KSI collisions were Black – the highest share in the City.

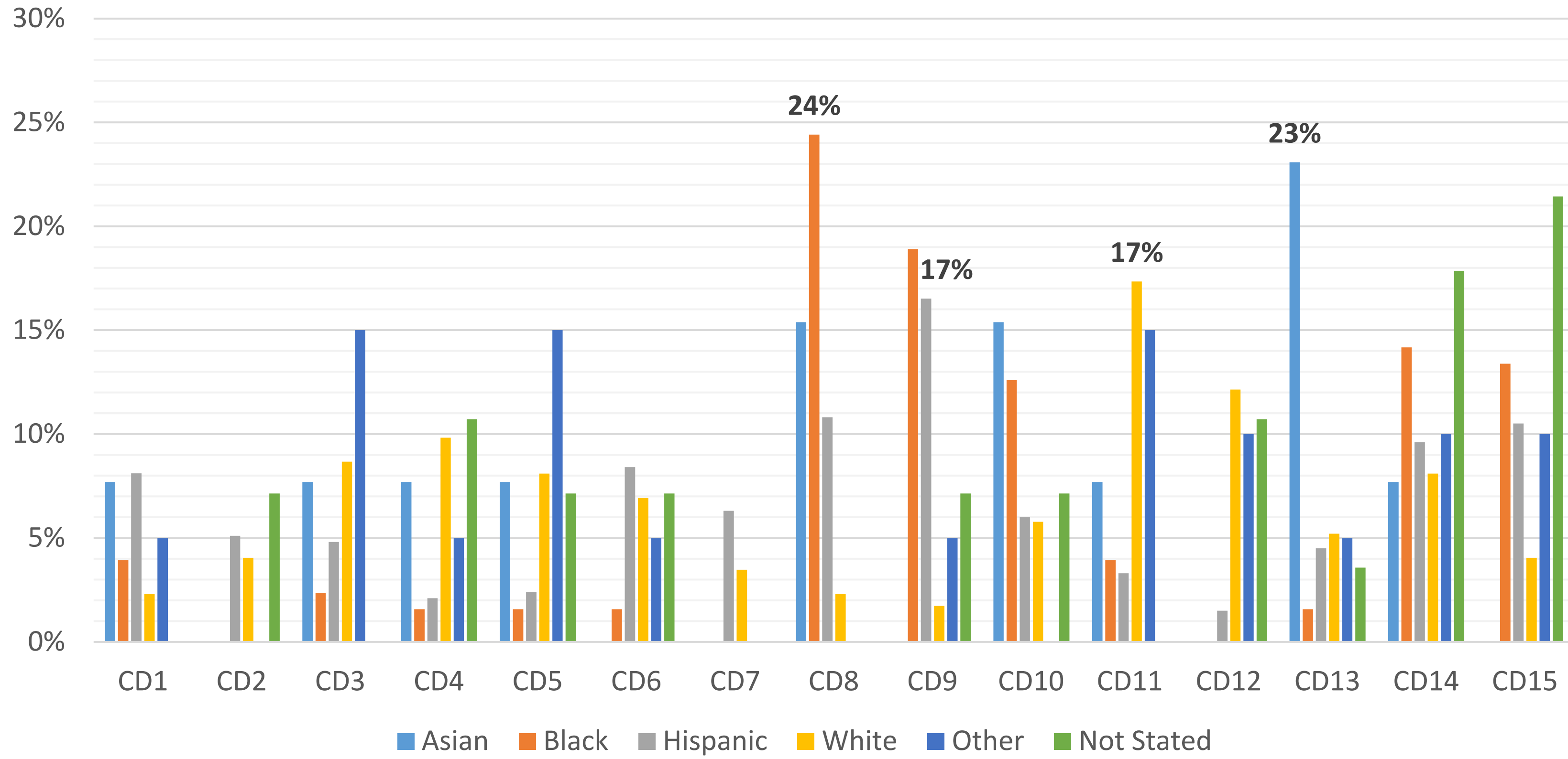
Figure 18. Bicyclists in KSI Collisions within Each District by Race/Ethnicity



Note: Data labels for values less than 5%were removed from the chart. Separately, the Census data represents race/ethnic composition for the City of Los Angeles, so, race/ethnicity composition may differ by district.

- Figure 19 is different from Figure 18 in that it presents the bicyclists involved in KSI collisions by race/ethnicity, as a share of bicyclists in KSI collisions across the entire City.
- For example, 24% of Black bicyclists involved in KSI collisions in Los Angeles were involved in a collision that occurred in CD 8 – the largest share in the City. 17% of Hispanic bicyclists involved in KSI collisions in Los Angeles were involved in a collision that occurred in CD 9 – the largest share in the City. 23% of Asian bicyclists involved in KSI collisions in Los Angeles were involved in a collision that occurred in CD 13 – the largest share in the City. 12% of white bicyclists involved in KSI collisions in Los Angeles were involved in a collision that occurred in CD 11 – the largest share in the City.

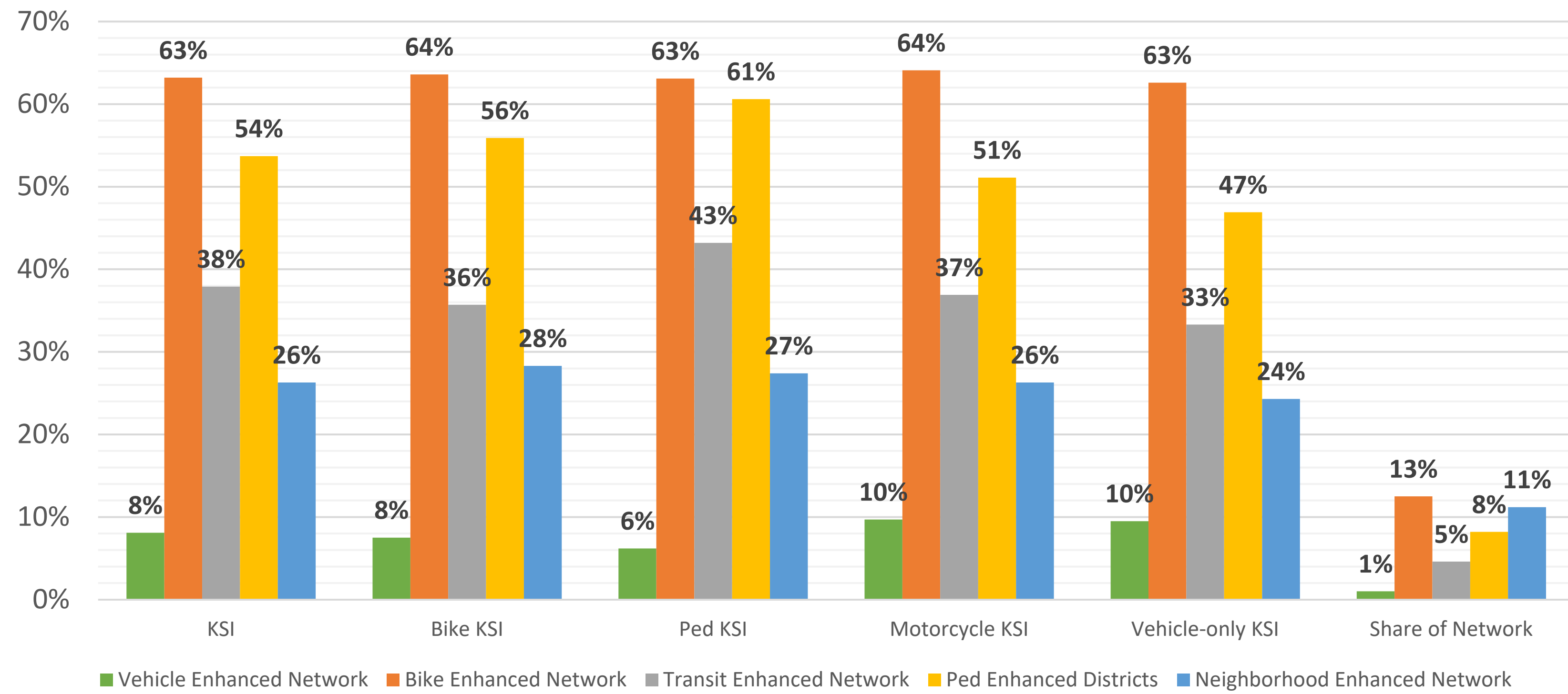
Figure 19. Share of Bicyclists in KSI Collisions by Race/Ethnicity Relative to City



Mobility Plan Classification

- Streets designated as Pedestrian Enhanced Districts (PED) represent 8% of the roadway network, but account for 61% of all pedestrian KSI collisions. Relative to other modes, pedestrian KSI collisions occur disproportionately in designated Pedestrian Enhanced Districts.
- Nearly two-thirds of KSI collisions occur on streets designated as part of the Bike Enhanced Network (BEN) or Bike Lane Network (BLN). These streets account for 13% of the total network.

Figure 20. Mobility Plan Classification

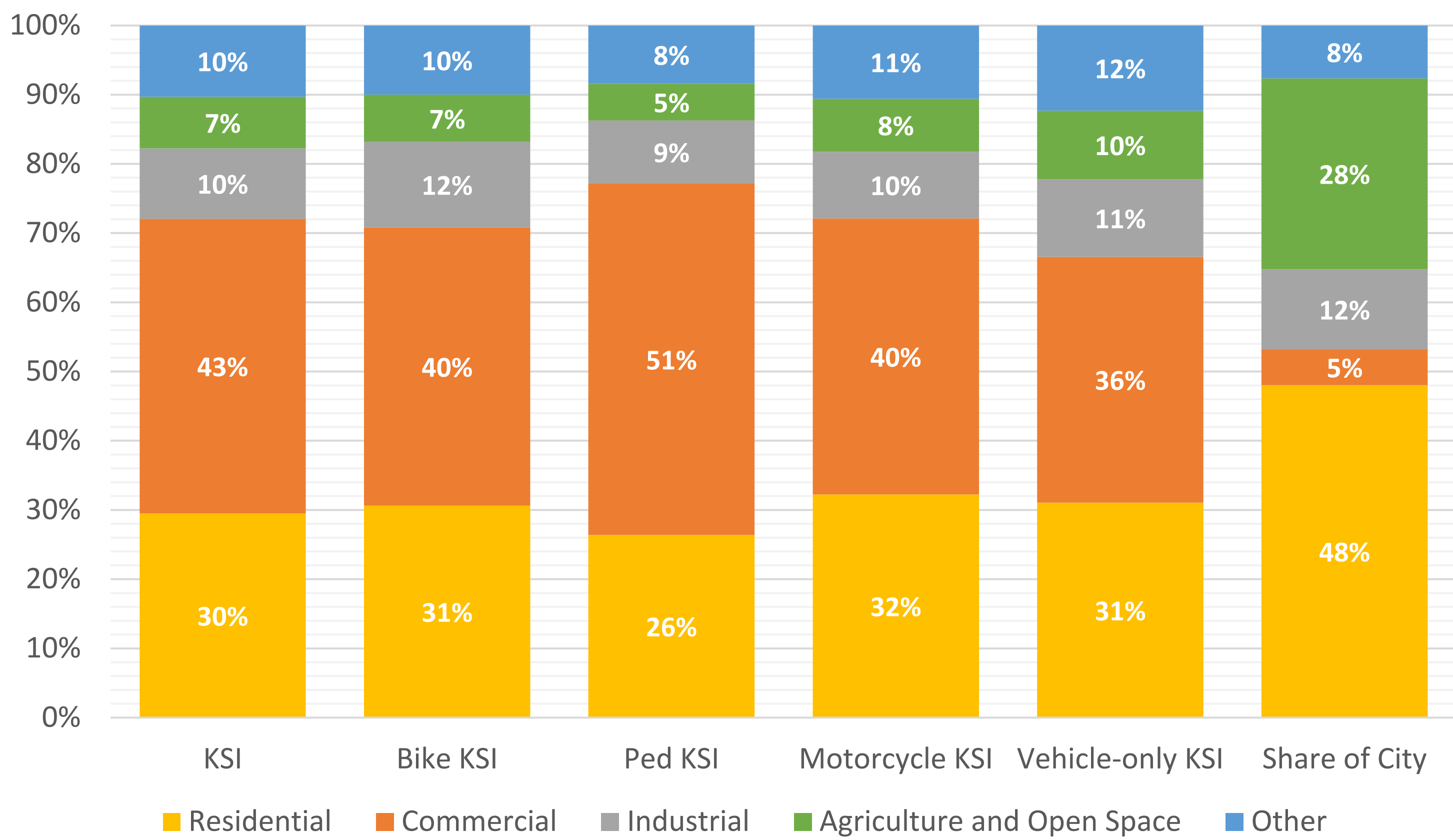


Note: Bike network includes both Bike Enhanced Network (BEN) and Bike Lane Network (BLN).

Land Use Classification

- Commercial land use represents 5% of the City's land area, but accounts for 36-51% of KSI collisions across all modes. Over half of pedestrian KSI collisions occur adjacent to commercial land use.
- Residential land use represents the most common land use type within Los Angeles, but accounts for 26-32% of KSI collisions across all modes.

Figure 21. Land Use Classification



- Across nearly all land use classifications, more than half of collisions occur where ADT is greater than 20,000, except for residential, which recorded 49% of such collisions. Commercial recorded the greatest proportion of collisions in 20k ADT roadways with 80%.

Figure 22. All Collisions by ADT per Land Use Classification

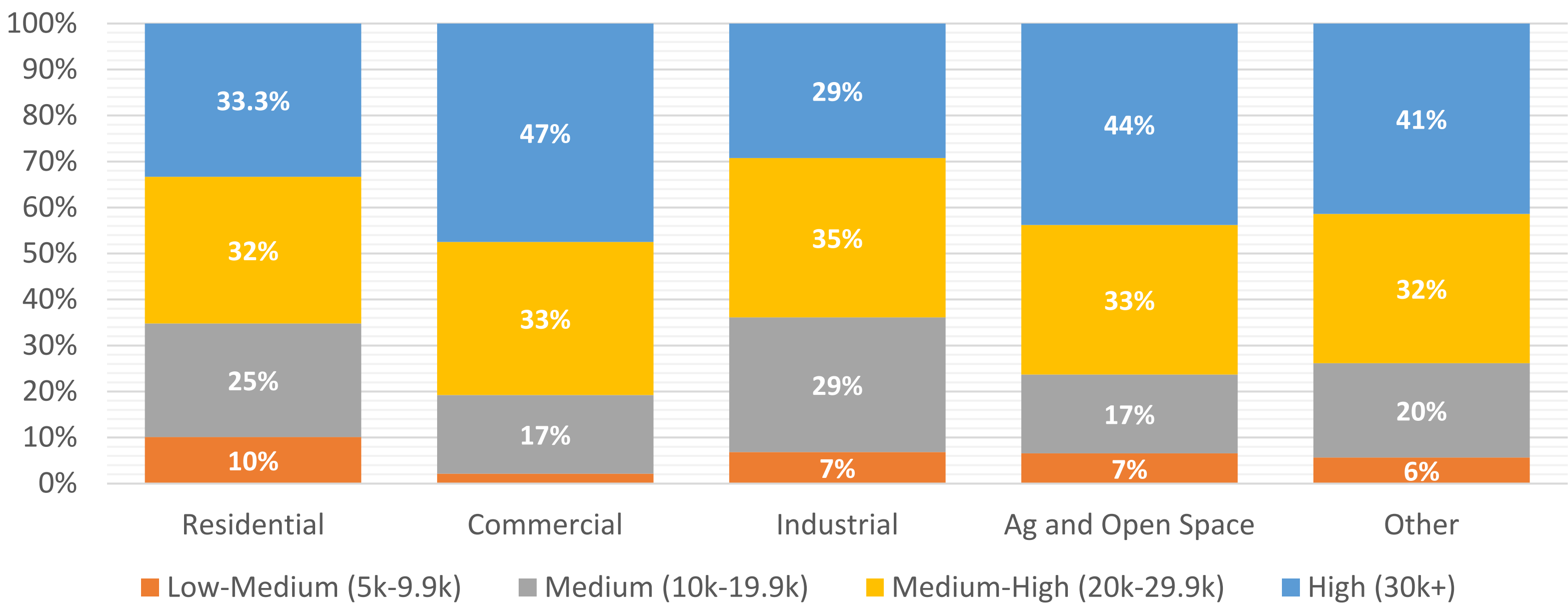


Table 3. All Collisions by ADT Shares per Roadway Classifications + ADT Share of Roadway Classifications

Metric	Weekday ADT	Land Use				
		Residential	Commercial	Industrial	Ag and Open Space	Other
Number of Collisions	Unknown	NA	NA	NA	NA	NA
	Low (<5k)	NA	NA	NA	NA	NA
	Low-Medium (5k-9.9k)	2125	872	555	384	531
	Medium (10k-19.9k)	5189	6923	2367	1004	1925
	Medium-High (20k-29.9k)	6701	13492	2804	1907	3046
	High (30k+)	6998	19254	2367	2566	3889
Share of Collisions	Unknown	NA	NA	NA	NA	NA
	Low (<5k)	NA	NA	NA	NA	NA
	Low-Medium (5k-9.9k)	10%	2%	7%	7%	6%
	Medium (10k-19.9k)	25%	17%	29%	17%	20%
	Medium-High (20k-29.9k)	32%	33%	35%	33%	32%
	High (30k+)	33.3%	47%	29%	44%	41%

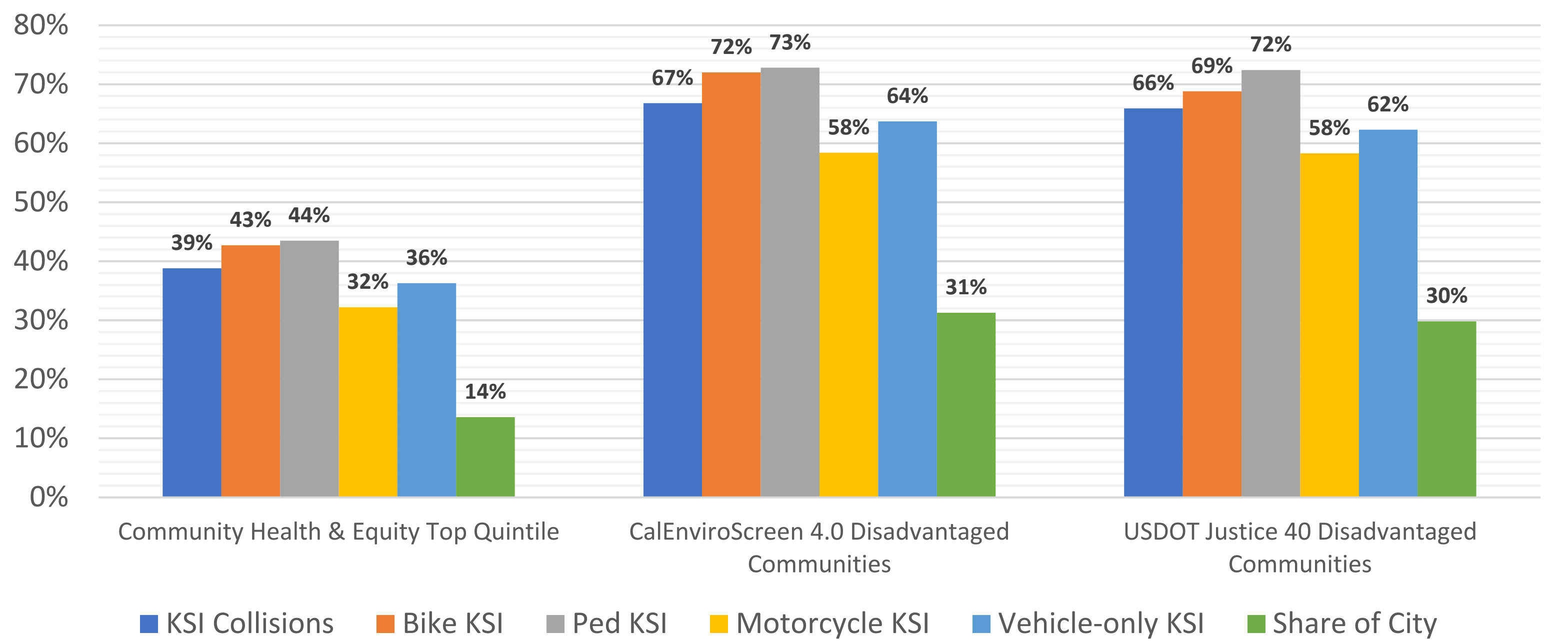
Note: Data labels for values less than 2% were removed from Figure 22.

Note: ADT was not collected for local roadways, therefore the Low ADT bin does not reflect accurate volumes.

Disadvantaged Communities

- This analysis examined three different Disadvantaged Community definitions:
  - Local: City of Los Angeles Community Health and Equity Index Top Quintile Areas
  - State: CalEnviroScreen 4.0 Disadvantaged Communities
  - Federal: USDOT Justice 40 Disadvantaged Communities
- Severe and fatal collisions occur disproportionately in Disadvantaged Communities. For each definition, the share of KSI collisions occurring in Disadvantaged Communities was vastly disproportionate to the share of the City that these communities account for.
- A higher share of bike and pedestrian KSI collisions occur in Disadvantaged Communities, when compared with other modes. 44% of severe and fatal pedestrian collisions occur in LA-defined Health & Equity focus areas, which account for just 14% of the City.

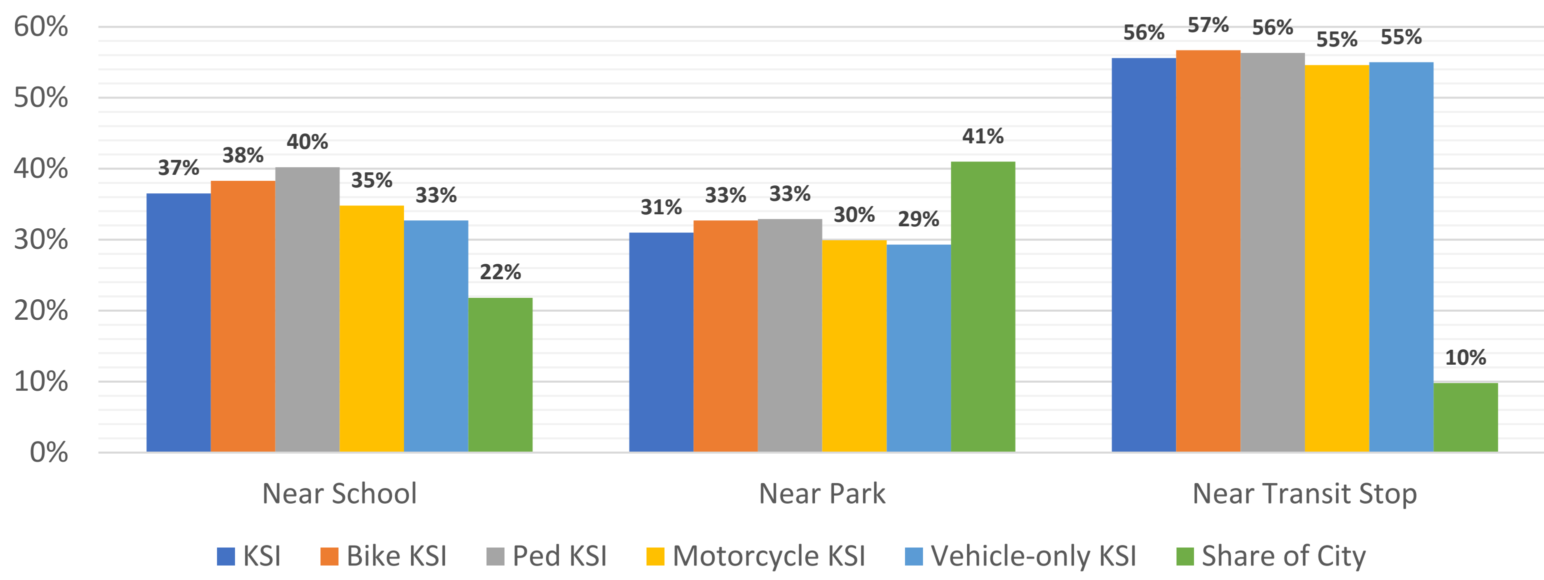
Figure 23. Disadvantaged Communities



Destination Proximity

- KSI collisions occur disproportionately near transit stops and schools.
- This analysis compared the share of collisions occurring within a search radius for each of the destination types, with the share of the City those buffers account for. The search radius for each destination type was:
  - Schools: 1,000'
  - Parks: 1,000’
  - Transit Stops: 250' for bus stops, 1,000' for rail stations
- Mode-specific KSI trends generally do not deviate from the overall KSI trend, but a larger share of pedestrian KSI collisions occur near schools, when compared with other modes.
- KSI collisions occurring near transit stops are more likely to involve a left-turning driver, when compared to the Citywide trend (30% vs. 25%, respectively).

Figure 24. Destination Proximity



Note: Schools include LAUSD schools and private schools. LAUSD schools flagged as being “closed” were not included in the analysis. Private schools within 500’ of a LAUSD school point were not included (these are duplicate school locations).

Appendix E

HIN AND PRIORITIZATION METHODOLOGY MEMO

FEHR & PEERS

Memorandum

Date: September 22, 2023

To: Christopher Rider, LADOT

From: Emily Finkel and Sean Reseigh, Fehr & Peers

Subject: Final High Injury Network and Prioritization Methodologies

LA22-3437

This memo summarizes the methodologies developed by Fehr & Peers for the 2023 High Injury Network and Prioritization update for the LADOT Vision Zero program. These methodologies have been reviewed and informed by LADOT staff and the City of Los Angeles Bicycle and Pedestrian Advisory Committees.

High Injury Network (HIN) Methodology

HIN Guidance Considerations

The methodology developed for this project is based on best practices identified from a review of recent, Safe System-focused Vision Zero programs, as well as LADOT's prior HIN methodology and the recent California MUTCD definition of Safety Corridors. Additional considerations that informed this methodology were based on the *Recommendations for California Statewide Guidance for High Injury Networks* report from the California Strategic Highway Safety Plan Pedestrian and Bicycle Challenge Area teams.

AB 43 Safety Corridors

The Safety Corridor Definition Requirements from the California Traffic Control Devices Committee (CTCDC) proposes the following factors to influence collision weighting:

- Crash severity
- Crash mode
- Disadvantaged Community status
- Vulnerable populations: Seniors (age 65+) and youth (under age 15)
- School proximity (within 0.25 miles)

Additionally, the AB 43 legislation language states that "a local authority shall not deem more than one-fifth of their streets as Safety Corridors." Safety Corridors should account for at least 25% of KSI collisions. While the Safety Corridors definition can now be used for identifying AB 43 posted speed reduction locations, the State will likely expand use of this definition to additional safety-related programs, policies, and funding sources. Due to this, we propose incorporating Safety Corridors considerations into LADOT's HIN process.

Prior Los Angeles HIN Methodology

The method used for HIN development in 2016, referenced in our proposed methodology, included the following:

- Used SWITRS 2009-2013 collision data, using only KSI collisions
- Bicycle and pedestrian KSI collisions were weighted by a factor of 3
- Some corridors were extended due to various factors, such as the street typology and/or to consider the proximity of other fatal or severe collisions
- The resulting HIN was comprised of 386 corridors that represented 6 percent of Los Angeles' street miles
- Subsequent analyses identified "Priority Intersections" where safety countermeasures can be applied (see Prioritization Methodology)

High Injury Network (HIN) Data

Collision Data

The HIN will be developed using the 5-year collision dataset for 2017-2021 from the City's RoadSafe GIS database. This dataset will only include injury collisions (i.e. excluding Property Damage Only collisions, where an injury was not reported) and will include collisions on surface street state facilities and at freeway ramp intersections. This database was compared against SWITRS, TIMS and LAPD data, with a limited number of additional collisions added where gaps could be identified.

Beginning on January 1, 2021, LAPD collision reporting methodology required parties to self-report lower-severity collisions through the City's online police report portal, which reduced the total number of injury collisions within the database for 2021.

Contextual Data

In addition to collision data, the HIN methodology will use the following contextual datasets:

- City of Los Angeles Centerline Feature Class (FC)

  - Segmented at block level
- Citywide Intersection Features Class
- City of Los Angeles Community Health and Equity Index
  - Top 20% Census Tracts with the highest scores
- Roadway and contextual factors related to roadway segments, intersections, land use, transit stops, and other key generators from the City of Los Angeles
- Big data, aggregated to the segment level, from the following sources:
  - Streetlight Data (vehicle volumes; bicycle and pedestrian activity)
  - Wejo (vehicle speed)

Collision Severity Weighting

Collision weights are derived based on 2022 California Local Road Safety Manual (LRSM) crash costs for each collision severity. This method is similar to the Highway Safety Manual (HSM) Equivalent Property Damage Only (EPDO) weighting method, but uses the "Complaint of Pain" severity level as its baseline, because Property Damage Only (PDO) collisions are not included in the HIN.

Cost assumptions from the 2022 Caltrans LRSM are based on costs included in the HSM First Edition, with costs adjusted to 2022 dollars. The HSM uses "comprehensive" or "societal" crash costs to associate costs with each crash severity level. Comprehensive costs include both economic costs and monetized pain and suffering costs. Economic costs are monetary costs associated with emergency services deployment, medical services, productivity loss due to victim injury, insurance and legal costs, costs as a result of congestion impacts as a result of the collision, and property damage costs. Monetized pain and suffering costs are an assumption of the costs associated with lost quality-of-life (or Quality-Adjusted Life Years [QALY]), accounting for reductions in life expectancy and quality of life changes as a result of a crash.

This methodology uses **all injury collisions** in HIN development (as opposed to KSI only).

Table 1: Collision Weights

Severity	Crash Cost	Weight
Fatal and Severe Injury (KSI)	$2,363,666.67*	26
Evident Injury – Other Visible	$159,900	2**
Possible Injury – Complaint of Pain	$90,900	1

*The fatal and severe injury (KSI) collision cost is an average of the location type costs (signalized intersections, non-signalized intersections, roadway).
**Rounded to nearest whole number.

High Injury Network (HIN) Development Methodology

Risk Factor Methodology

This methodology uses a systemic safety analysis methodology to build an HIN that incorporates a proactive approach, rather than relying only on collision history to identify priority locations. Known roadway and contextual risk factors will also be scored for both segment and intersection locations, regardless of that location's history of injury collisions. Risk factors are based on recommendations within one or more of the following resources:

- *Prioritization of Highway Safety Manual (HSM) Data Variables Using Random Forest Algorithm*, TRB, 2014
- *Systemic Pedestrian Safety Analysis*, NCHRP, 2018
- *Guide for Quantitative Approaches to Systemic Safety Analysis*, NCHRP, 2020
- *Recommendations for California Statewide Guidance: High Injury Networks*, California Strategic Highway Safety Plan Bicycle and Pedestrian Challenge Area, 2021

Location factors will be applied to the segment or intersection, rather than the collision. Under this option, the cumulative score for a single collision can range from 1 to 32. The cumulative score for a single intersection or segment, independent of collisions, can range from 0 to 15. Cumulative scores for collisions and locations will be summed when collisions are aggregated to segments and intersections (see following section for more detail). A segment with all location-based risk factors and no injury collision history will score a total of 15. **Table 2** presents the variables and their associated scores.

Table 2: HIN Scoring

Variable	Value	Score
Collision Factors		
Collision Severity (factors are mutually exclusive) – applied to collision		
Fatal and Severe Injury (KSI)	0 or 1	26
Evident Injury – Other Visible	0 or 1	2
Possible Injury – Complaint of Pain	0 or 1	1
Additional Factors (factors not mutually exclusive) – applied to collision		
Mode: involves bicyclist or pedestrian	0 or 1	3
Vulnerable population: Injury and fatality victims age 65+ or 17 and under	0 or 1	3
Contextual Factors		
Location Factors (factors are mutually exclusive) – applied to segment or intersection		
Within City of LA Community Health and Equity Index (Top Quintile) census tracts (2021)	0 or 1	3
Within 1,000' of a school (public or private)*	0 or 1	3
Ped and Bike Activity Factors (factors are mutually exclusive) – applied to segment or intersection		
Pedestrian activity center (top 25% of Census Block Groups with pedestrian trip starts/ends)**	0 or 1	3
Bicycle activity center (top 25% of Census Block Groups with bicycle trip starts/ends)**	0 or 1	3
Roadway Risk Factors (factors are mutually exclusive) – applied to segment or intersection		
High ADT (segments with 30,000+ ADT)**	0 or 1	3
High Roadway Classification (Boulevard I or II)	0 or 1	3
Designated Truck Route	0 or 1	3
Additional Risk Factors (factors not mutually exclusive) – applied to segment or intersection		
High Observed Speed (all segments with 85th percentile speeds higher than 40 mph)***	0 or 1	3
Presence of transit stop (bus and rail) (within 250')	0 or 1	3

*Available school site data from the City of LA that includes private institutions are point-based, will be based on 1,000-foot buffer from point data. Does not include colleges.
** Data source: Streetlight location-based services data
***Data source: Wejo connected vehicle data

Associating Collisions to Roadways and Intersections

The following section outlines the major steps of the methodology for associating collisions with roadway segments and intersections.

1) **Associating collisions to roadway segments:** Collisions will be associated to roadway segments using a 50-foot roadway segment buffer. Collisions within 50' of multiple roadway segments (e.g. at an intersection) will be assigned to each segment, and will be double-counted.
2) **Associating collisions to intersections:**
   a) For the purposes of identifying high-scoring intersections, intersection collisions will be spatially joined to the intersection using a non-overlapping intersection buffer. The intersection buffer radius will be 250', consistent with HSIP guidance.
   b) While roadway segments will be the basis for formation of the HIN, high-scoring intersections along the HIN will also be identified and factor into the priority location methodology. Separate high-scoring lists will be developed for signalized intersections and unsignalized intersections.
3) **Calculate HIN Index**
   a) A score for each roadway and/or intersection (known as the HIN Index) will be calculated by aggregating the weighted collision and risk factor sums, which will be joined to the network in the previous step.
4) **HIN Building**
   a) The top 95th percentile scoring segments will be identified and connected to form the HIN. Quarter-mile segments are dissolved together based on proximity. If the distance between 95th percentile scoring segments is a half mile or less and segments have the same roadway name, they will be connected. Additionally, if the distance between a 95th percentile scoring segment and the end of the roadway is a half mile or less, the segment will be extended to the end of the roadway. HIN corridors will be 0.5 miles and longer as a result of this process.
5) **HIN Check and Refinement:** Verify that the HIN accurately incorporates the 95th percentile scoring segment gap threshold into the final HIN.
6) **Repeat for All HIN Modes:** The process described in steps 1-5 will be repeated for each of the modal HINs: bicycle, pedestrian, motorcycle, and motor vehicle. A final HIN for all travel modes will be prepared using injury collisions for all modes.

Safety Corridors

The HIN development steps will largely be repeated to define Safety Corridors. Safety Corridors will identified using the top 90th percentile scoring segments, with resulting corridors 0.5 miles or longer. Based on AB 43 guidance, Safety Corridors cannot constitute more than 20% of the total street network and must account for at least 25% of KSI collisions.

Prioritization Methodology

Prioritization Purpose

Fehr & Peers will identify the highest priority corridor locations on the HIN to help LADOT prioritize locations for project implementation, based on collision history, high-risk contextual factors and departmental priorities. All segments on the HIN will be scored, resulting in a full ranked list for the department. This process will be completed for each mode-specific HIN and the all collision HIN, resulting in five final priority location lists.

All city-wide intersections will be scored based on the prioritization methodology, resulting in a full ranked list for the department. Intersection prioritization will not be limited to the HIN.

Prior Los Angeles Prioritization Methodology

The method used for intersection prioritization within the Los Angeles HIN in 2016, referenced in our methodology, included the following characteristics:

- Intersection-based (i.e. collisions assigned to intersections, high priority intersections selected)
- Fatal collisions received score of 1.5, severe injury collisions received score of 1
- 1 additional point assigned for collisions involving a child or senior bicyclist or pedestrian
- 1 additional point assigned for collisions falling within top 25% of Community Health and Equity Index target communities
- Prioritization included only KSI collisions

2019 and 2021 Prioritization

In 2019 and 2021, new Priority Corridors were identified using a threshold of 15 KSI collisions per mile, and Priority intersections were identified using a threshold of 5 KSI collisions, based on the most recently available 5 years of data.

Prioritization Methodology

The prioritization methodology includes the following inputs to identify priority locations.

Table 3: Prioritization Score

Variable	Value	Score	Contextual Factor Association
Final Collision HIN Score, normalized by length*	Value will be calculated once corridors are defined	Scaled to 0-65	-
Final Contextual HIN Score**	0, 3, 6, 9, 12, 15	0, 5, 10, 15, 20, 25	-
Presence on Mobility Plan Enhanced Network***	0 or 1	0 or 10	Contains majority overlap (>50%)
Total Score	**-**	**100**	**-**

*Final Collision HIN Score reflects the total score of all 0.25 overlapping segments along a defined corridor. This score will include double-counting for adjacent overlapping segments.
**Corridors with contextual factors present along any 0.25 mile segment of the corridor will have the contextual factor applied to the entire length of the corridor.
***Overlap with at least one Mobility Plan Enhancement Network will vary for each modal HIN. Pedestrian HIN: Pedestrian Enhanced Districts, Neighborhood Enhanced Network; Bicycle HIN: Bicycle Enhanced Network, Bicycle Lane Network, Neighborhood Enhanced Network; Vehicle, Motorcycle and All Collision HINs: applicable for any enhanced network, except the Vehicle Enhanced Network.

For city-wide intersection prioritization, the scoring shown in Table 3 will be scaled up by a factor of 10, for a maximum total score of 1,000. More detail on variable association to intersections is provided in the Analytical Process Steps section below.

Prior Priority Corridors

The list of corridors resulting from this methodology will not consider whether a corridor was present on the existing LADOT priority locations list.

Analytical Process Steps

The following section outlines the major steps of the methodology for defining priority corridors, and associating collision and contextual factors to corridors and intersections.

1) **Defining Corridors:** HIN segments with a length of 2 miles or less will not be split into shorter corridors. Segments with a length of more than 2 miles will be split using the following approach.
   a) For each 2+ mile corridor on the HIN, the top 90th percentile sections are identified and dissolved together. These are defined as top scoring "islands."
   b) These islands are then dissolved together if they are within a half mile of each other.

   c) If the resulting length of this dissolve is more than one mile in length, the island will be defined as its own corridor.
   d) Top scoring islands that are one mile or longer in length are extended to connect to the nearest mile marker on each end. If islands shared a mile marker intersection, the segment will be assigned to the island closer to the start point of the corridor.
2) **Defining Intersections:** All city-wide intersections will be included in the prioritization, with separate flags for unsignalized and signalized intersections. Intersection that have at least one leg on a defined HIN corridor will be flagged as "HIN intersections."
3) **Associating the collision HIN score**:
   a) **Corridors:** Each corridor will have a collision HIN score which is a sum of all overlapping 0.25-mile segments completely contained within the extents of the corridor. Corridor scores will be normalized by length and on a scale from 0-65.
   b) **Intersections:** Intersection HIN scores will be scaled from 0-650.
4) **Associating the contextual HIN score:**
   a) **Corridors:** Corridors will use a modified contextual HIN score based on the scores in Table 3. Contextual factors present on at least one overlapping 0.25-mile segment contained within a corridor will be included in the contextual HIN score. For example, if a 0.25-mile segment on one end of the corridor is within 250 feet of a transit stop, and a segment on the other of the corridor is a high ADT segment, both contextual factors will be applied to the corridor.
   b) **Intersections:** Intersections will use a modified contextual HIN score based on the scores in Table 3. Contextual factor association will be based on an *intersect* with the 250' intersection buffer, with a maximum score of 250. For example, if at least one leg of an intersection is on a Mobility Plan Enhanced Network, the intersection will receive a score of 100 for that variable.

Final priority score: Collision and contextual HIN scores will be summed for all HIN segments and for all intersections city-wide. Final segment scores will have a maximum of 100 and intersection scores will have a maximum of 1,000.

Repeat for All HIN Modes: The process described in steps 1-4 will be repeated for the all collisions HIN and each of the modal HINs: bicycle, pedestrian, motorcycle, and motor vehicle.